COASTAL WATER QUALITY

HEARING

BEFORE THE

SUBCOMMITTEE ON FISHERIES AND WILDLIFE CONSERVATION AND THE ENVIRONMENT

AND THE

SUBCOMMITTEE ON OCEANOGRAPHY

OF THE

COMMITTEE ON MERCHANT MARINE AND FISHERIES HOUSE OF REPRESENTATIVES

ONE HUNDREDTH CONGRESS

SECOND SESSION

ON

IMPACT OF NONPOINT SOURCE POLLUTION ON COASTAL WATER QUALITY

JULY 13, 1988

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IMPACT OF NONPOINT SOURCE POLLUTION ON COASTAL WATER QUALITY

WEDNESDAY, JULY 13, 1988

U.S. HOUSE OF REPRESENTATIVES, SUBCOMMITTEE ON FISHERIES AND WILDLIFE CONSERVATION AND THE ENVIRONMENT, AND SUBCOMMITTEE ON OCEANOGRAPHY, COMMITTEE ON MERCHANT MARINE AND FISHERIES,
Washington, DC.

The subcommittees met, pursuant to recess, at 2:07 p.m., in room 1334, Longworth House Office Building, Hon. Gerry E. Studds (chairman of the Subcommittee on Fisheries and Wildlife Conservation and the Environment) presiding.

Present: Representatives Studds, Saxton, Dyson, Clement, Carper, Hughes, and Saiki.

Staff present: Joyce Sacco, Will Stelle, Lisa Pittman, Tom Melius, Sue Waldron, Tom Laverty, Russell Shay, and Curt Marshall.

STATEMENT OF HON. GERRY STUDDS, CHAIRMAN, SUBCOMMITTEE ON FISHERIES AND WILDLIFE CONSERVATION AND THE ENVIRONMENT

Mr. STUDDS. The Subcommittee convenes to continue our oversight hearings on coastal pollution and coastal resource protection.

In two hearings last year we examined the nature and scope of the problems confronting our coastal waters and their resources. In two hearings earlier this year we considered the programs under the Clean Water Act for maintaining water quality and for controlling discharges of pollutants from pipes by industry and municipalities.

Today we will be talking about another set of threats to coastal water quality, those grouped under the singularly inelegant label of nonpoint source pollution. Incidentally, if anybody can come up with any way which these problems can be addressed with some semblance of the English language, I, for one, would be very grateful.

Nonpoint source pollution encompasses agricultural and silvicultural runoff, urban stormwater discharges, and airborne pollution. These diverse sources discharge an equally varied group of pollutants to our coastal waters, ranging from nutrients in agricultural runoff, such as nitrogen and phosphorous, to heavy metals in urban runoff to acid deposition produced by emissions from cars and fossil fuel-burning power plants.

Because of the diversity of sources, our efforts to control nonpoint source pollution must, of necessity, cut across a number of institutional boundaries and affect a wide range of activities. Yet these efforts are among the most important for our protection of coastal water quality. In fact, in the most recent national assessment of water quality, EPA identified nonpoint source pollution as the leading reason we are not meeting our water quality goals.

Our purpose today is to examine two fundamental questions about control of nonpoint source pollution. The first is: how do we shape the various Federal, State, and local efforts for nonpoint source pollution control into a system that functions at least as well as the companion programs for control of point source pollution?

The second question is: how do we integrate this system with the water quality standards program, which is presumably intended to reign in both point and nonpoint sources to achieve certain water quality goals.

To help us answer these questions, we have a very good panel with us today. Peter Myers is Deputy Secretary for the Department of Agriculture. In that capacity he oversees the work of many of that Department's agencies with an impact on nonpoint source pollution, including the Soil Conservation Service and the Forest Service.

Bill Whittington is Acting Deputy Assistant Administrator at EPA's Office of Water and Chairman of that agency's nonpoint source task force.

Dick Nichols is administrator for the water quality division of Oregon's Department of Environmental Quality and has served as Chairman of an interstate task force on implementation of the Clean Water Act's nonpoint source program.

Bob Adler is senior attorney with the Natural Resources Defense Council, which has been working on an assessment of the nonpoint source program in Virginia.

Joseph Goffman is an attorney with the Environmental Defense Fund, which recently completed a study of the contribution that airborne pollution is making to the excessive nutrient loadings in Chesapeake Bay.

I appreciate you all being here. Please come forward now.

I gather you have graciously agreed to come as a single panel. Not only that, but you have been willing, I am informed, to confine your written statements to no more than 5 minutes each. No, your written statements can be as long as you want. Your oral statements are going to be no more than 5 minutes each. We particularly appreciate that.

The odds are, as I am sure you know, we will be interrupted by votes on the floor. It could be a trying afternoon, as it so frequently is here.

The gentleman from New Jersey?

STATEMENT OF HON. JIM SAXTON, A U.S. REPRESENTATIVE FROM NEW JERSEY

Mr. SAXTON. Thank you, Mr. Chairman. Let me just be brief and thank you, as well as Chairman Lowry, not just for calling today's hearing on nonpoint pollution, but also for organizing the entire series of coastal pollution hearings. They have been extremely helpful to me in helping to identify the gaps in our present understanding of coastal pollution issues as well as in illuminating the needs for legislative action, and I might add, in defining the current and future roles of this committee and of the Congress in addressing coastal affairs.

No issue more clearly demonstrates the connection between land and sea, or the complexity of that connection, than nonpoint pollution. The scientific, organizational, and political challenges it represents are immense, but it is a challenge that must be met.

On May the 5th of this year, we sat in this same room and heard horror stories about the effects of contaminants, much of it from nonpoint sources, on the Nation's striped bass stocks. Contaminants such as DDT, PCB, mercury, arsenic, and dioxins have all been identified from the flesh of juvenile striped bass everywhere from the Hudson River to the Sacramento River. Agricultural runoff has been blamed as a major contributor to declines in estuarine water quality. Acid rain and other atmospheric sources have also been identified as sources of coastal pollution, all again nonpoint sources. So, in my opinion, this is no simple problem.

I was extremely gratified to see that the National Oceanic and Atmospheric Administration's recent report on marine pollution problems had an entire section of nonpoint sources. I was further gratified when I saw that they concluded that an effective program for dealing with this problem "must be built upon active citizen involvement."

The pollutants that flow down our rivers, across our fields, and along the gusts of wind do not recognize the same organizational and political boundaries that we do. While a solid scientific understanding is always a precursor to informed action, I believe our largest challenges will lie in the implementation of that knowledge. That belief, as well as a belief that a modest investment in avoidance is far better than dependence upon expensive remediation, is what drives me and my constituents' concerns with the state of our ability to cope with the nonpoint source pollution problem.

Mr. Chairman, I hope in the testimony of today's witnesses we will hear not just about the extent of the problem, which we have examined over and over again, but in particular today about the cooperative efforts directed toward prevention of further nonpoint pollution.

I also ask unanimous consent at this point, Mr. Chairman, to have Mr. Davis' statement included in the record.

Mr. STUDDS. Without objection. We will also include the statement of Mr. Lowry.

[The prepared statements of Messrs. Davis and Lowry follow:]

STATEMENT BY THE HONORABLE ROBERT W. DAVIS (R.-MICH.) AT THE JOINT SUBCOMMITTEE HEARING ON NONPOINT POLLUTION: JULY 13, 1988.

Nonpoint source pollution, primarily urban and agricultural runoff, is a growing problem, with over one-half of coastal water pollution attributed to these sources. In the Great Lakes, land use activities have contributed 11 million tons of sediment to Great Lakes waters, adding phosphorous, metals, and other pollutants. Urban runoff added 420 tons of zinc, lead, copper, nickel and chromium, eight tons of cobalt, mercury, arsenic, selenium and cadmium, .077 tons of PCBs, and .069 tons of chlorinated benzenes to a primary source of drinking water for over 38 million people. In addition, the "death" of algae-choked Lake Erie in the 1960s was often attributed to phosphorous draining into the Lakes after use as crop fertilizer.

Although Lake Erie has recovered somewhat from its brush with nonpoint source pollution, other waters are just beginning to feel its shock. In my district, the St. Mary's River is suffering from various chemicals leaching from industrial sites along the banks. The area has been identified as one of the 18 most poisonous sites in the Great Lakes. Fish are suffering, and drinking water supplies for Chippawa County residents are threatened. Unfortunately, locating the specific pollution sources and devising ways to stop them from flowing into the River with each snow melt or rain is difficult, and the citizens of Michigan and their Canadian neighbors are now wrestling with that problem as they develop a Remedial Action Plan to clean up the area.

Acid deposition and other toxic airborne pollutants are a largely ignored but deadly addition to our coastal waters. Toxic air pollution is a significant problem in the Great Lakes because of their enormous surface area. Even pristine wilderness has fallen victim: a small lake in Isle Royale National Park, an unspoiled area in the northwestern corner of Lake Superior, is contaminated with DDT which could have only found its way to the lake via the air. In addition, scientists have estimated that over 85 percent of the PCBs found in Lake Superior originated from the air. An article in Tuesday's *New York Times* documents the serious damage these airborne toxics are wreaking on Great Lakes fish and wildlife.

Finally, acid rain is a problem that has become not only an international issue between the U.S. and Canada but a regional issue here at home. We must find a solution which fairly balances the need for reduction in airborne pollutants in some states with the recognition of efforts and reductions already in place in others.

The Great Lakes Water Quality Agreement was recently amended to reflect the growing concern over these risks to clean water. New promising annexes covering monitoring programs for airborne

POLLUTANTS AND WATERSHED MANAGEMENT OF NONPOINT POLLUTION WERE NEGOTIATED BY U.S. AND CANADIAN OFFICIALS, WITH MUCH ASSISTANCE FROM CITIZEN AND ENVIRONMENTAL GROUPS. AS A SIGNATORY OF THE AGREEMENT, THE U.S. IS PLEDGED TO PURSUE REMEDIES AS QUICKLY AS POSSIBLE. UNFORTUNATELY, EFFECTIVE CONTROLS ARE NOT LIKELY ANY TIME SOON.

THE FEDERAL GOVERNMENT IS ONLY NOW FOCUSING ON POLLUTION CONTROL IN THIS AREA, AND I AM SURE THAT THE FLEDGLING NONPOINT SOURCE PROGRAMS WE HAVE ALREADY DEVELOPED WILL NEED SOME WORK TO SUFFICIENTLY PROTECT OUR COASTAL WATERS. THE GREAT LAKES WILL NEED SPECIAL PROTECTION, AS THEY DO NOT SHARE THE NATURAL FLUSHING ACTION FOUND ALONG THE OTHER U.S. COASTS, AND WATER FLOW FROM THE LAKES IS EXTREMELY SLOW. TODAY, I HOPE THAT OUR WITNESSES WILL GO BEYOND HIGHLIGHTING THE PROBLEMS AND HELP IDENTIFY SOLUTIONS TO THE DIFFICULTIES WE AND OUR CONSTITUENTS LIVE WITH EVERY DAY.

# # # # # #

RWD:LPM

STATEMENT OF THE HONORABLE MIKE LOWRY (D-WA)
REGARDING NONPOINT SOURCE COASTAL POLLUTION
BEFORE A JOINT HEARING OF
THE SUBCOMMITTEES ON OCEANOGRAPHY AND
FISHERIES AND WILDLIFE CONSERVATION AND THE ENVIRONMENT

JULY 13, 1988

Mr. Chairman, in the past, nonpoint source pollution has not always received high-priority status in the overall examination of coastal pollution. It as recently been proven to be an issue deserving greater emphasis as studies are released showing nonpoint source pollution as having a severe impact on coastal regions. It has also proven to be an extremely complex issue to study, much less control, as there are so many aspects and uncertainties not only of the sources, but also of the transports, fates and specific effects of the various pollutants.

A first step in handling such a complex issue such as nonpoint source pollution is to develop specific organization strategies regarding its management and control. Although it is a nationwide problem, it does differ among regions. For this reason, individual states should play an active part in the study and development of local programs to control coastal pollution. Under the Coastal Zone Management Act (CZMA), states are encouraged to develop state coastal management programs. These programs could be modified and improved to better be able to control and manage land and water-oriented activities which contribute to nonpoint source pollution within the coastal zone.

I would suggest that the CZMA program could be amended to require that state programs incorporate specific new regulatory measures with respect to nonpoint source pollution. This may, in turn, require that more specific nonpoint source pollution criteria be established upon which state programs could base their requirements. Because of the serious funding problems that exist, it may also require that state programs reassess their priorities within their programs and continue to seek more funding.

Nonpoint source pollution is already a major problem in coastal pollution management and will continue to grow until steps are taken. I believe these steps could be best taken on the local level, through CZMA programs, but the local programs need better federal support and encouragement also.

Thank you, Mr. Chairman.

Mr. **Studds**. We apologize for the Pavlovian nature of this existence.

While we're waiting, does the gentleman from Maryland have an opening statement?

Mr. **Dyson**. No, thank you, Mr. Chairman.

Mr. **Studds**. The gentleman from Tennessee?

Mr. **Clement**. No, I don't, Mr. Chairman.

Mr. **Studds**. We are going to have to suspend for about 10 or 12 minutes in order to get through the atmosphere out here and back again. It ought to be possible, especially if we stay indoors. We shall resume in about 10 or 15 minutes. We apologize to you.

Hopefully—a favorite adverb of this institution—that will be the last interruption. We'll be right back.

[Recess.]

Mr. **Studds**. The Subcommittee will resume. We apologize for the interruption.

I'm going to go, if it's all right with you folks, in the order in which you appear on the witness list. We will hear each of you first and then we'll go as a panel to questions. We will begin with Mr. Peter Myers, Deputy Secretary of the Department of Agriculture.

Mr. Myers?

STATEMENT OF PETER C. MYERS, DEPUTY SECRETARY, U.S. DEPARTMENT OF AGRICULTURE

Mr. **Myers**. Thank you, Mr. Chairman.

I'm here to discuss the Department of Agriculture's programs relating to nonpoint source pollution and coastal and estuarine water quality.

The general framework of addressing the water quality within USDA is provided under the several acts that we have that are listed in my written testimony. Due to the close proximity of agricultural lands to coastal and estuarine waters, USDA programs have a significant involvement in the protection of these waters.

I will limit my remarks today primarily to the activities and programs of two agencies: the Soil Conservation Service and the Forest Service.

The Soil Conservation Service provides financial and technical assistance to the private agricultural sector for the conservation of soil and water resources. Program assistance is available to landowners and users on a voluntary basis.

The Soil Conservation Service has a broad range of technical programs that relate to the protection of soil and water resources. One of these acts, the Watershed Protection and Flood Prevention Act, which is Public Law 83-566, has as objectives of it a program to include flood prevention, erosion reduction, agricultural water management, fish and wildlife development, water quality improvement, and other related agricultural and rural municipal water needs.

Moving to another act, the conservation compliance provisions of the Food Security Act of 1985, this act encourages the conservation of highly erodible cropland and the protection of existing wetlands.

The same act, the Food Security Act of 1985, has a conservation reserve program in it that has the potential to remove from cultivation 40 to 45 million acres of highly erodible farmland.

The Conservation Reserve Program is a voluntary program administered by ASCS, the Agricultural Stabilization and Conservation Service, with technical support from SCS, to help farmers reduce critical soil erosion on highly erodible croplands.

Another one of our programs, the cooperative river basin studies, is carried out by the Soil Conservation Service to assist States in developing plans to control nonpoint source pollution, serve water, and preserve wetlands.

Estuaries of national significance have recently been identified by the Congress and the Environmental Protection Agency where water quality, fish and wildlife habitat, sedimentation, and estuary use and development are major concerns.

The Department of Agriculture has a major interest in the evaluation of estuarine water quality concerns because of farm and forest operations adjacent or tributary to the estuaries. The Department, through SCS and the Forest Service technical programs, is directly assisting the various estuary planning organizations in data acquisition and analysis and in the treatment of nonpoint source water pollution problems.

In the case of the Chesapeake Bay, SCS has committed an additional 31 employees to work on evaluation and restoration efforts. Four employees have been committed to work with EPA on the Puget Sound.

State agricultural experiment stations in Maryland, Delaware, and Virginia and Delaware State University, in cooperation with the United States Department of Agriculture, are conducting research into agricultural practices that may impact the Chesapeake Bay environment. In addition to providing technical assistance and direct project involvement, the Soil Conservation Service has developed numerous databases that are major sources of nonpoint source pollution treatment information. These include the National Soil Survey Program and the National Resource Inventory.

The Forest Service, another of our agencies, has a cooperative forestry program that provides assistance in the restoration of lands that have been misused in the past. This agency, the Forest Service, has a research program that continues to provide information that is heavily used in the development of land management practices designed to reduce the impacts of forest management activities on water quality. In addition to State assistance in forestry research, the Forest Service is responsible for the management of 191 million acres of land in the national forest system.

The Forest Service uses best management practices, or BMP's, to control to the extent practicable pollution from nonpoint sources on national forest land.

In addition to development of programs designed to prevent creation of new problems from proposed activities, the Forest Service is also involved in a watershed improvement program designed to correct problems resulting from past activities on national forest land.

In summary, Mr. Chairman, I would say that in the area of water quality the principal objectives of the Department of Agriculture are to reduce soil erosion through implementation of conservation practices of the Food Security Act of 1985, to continue developing and implementing best management practices for the control of nonpoint pollution sources from agricultural and silvicultural activities, and to address the impacts of agriculture on surface and groundwater resources through sediment reduction and the effective management of agricultural chemicals, nutrients, and animal waste products.

This concludes my oral presentation, Mr. Chairman. I'd be pleased to answer questions at the end of this panel.

[The prepared statement of Mr. Myers can be found at end of hearing.]

Mr. STUDDS. Thank you very much, sir.

Mr. Whittington?

STATEMENT OF WILLIAM A. WHITTINGTON, ACTING DEPUTY ASSISTANT ADMINISTRATOR, OFFICE OF WATER, U.S. ENVIRONMENTAL PROTECTION AGENCY

Mr. WHITTINGTON. Thank you, Mr. Chairman. I would just say a few words to summarize my statement which lays out EPA's programs.

First, simply put, what is a nonpoint source? The answer is that effluents from pipes are point sources, and nonpoint sources, by default, are everything else. There are some exceptions to that, as always, but I think that's it in a nutshell.

Mr. STUDDS. I think "everything else" would be a nicer way to refer to them.

Mr. WHITTINGTON. Turning now to the impacts of these nonpoint sources, what can those impacts be, particularly in the estuarine situation? Well, one of them is oxygen demand which means that the nonpoint source materials use up the oxygen supply which results in fish kills.

Another is nutrients which can lead to excessive algae growth and also fish kills. The algae growth in turn can lead to blocking out needed light for sea grasses.

The third type of impact is from toxic materials which can come from nonpoint sources, for example, pesticides.

The fourth type of impact is from sediments themselves which can blanket critical habitat areas.

The coastal areas are particularly vulnerable to nonpoint sources because these areas end up being the sink into which everything flows from the inland areas. That's been going on naturally with or without man present on the continent since time began, I suspect.

Let me now turn to the charts which I brought along with me and just briefly summarize them. They are a package that looks like this [indicating].

Briefly, the charts show sources of pollution problems in estuaries which are impaired; 45 percent of the impairment is from nonpoint source. The next biggest source is 22 percent and that is municipal waste. Again, these are estuaries where water uses are not being attained, and what it shows is that, as you said in your opening remarks, the nonpoint source problem is a substantial problem in the United States today.

The next series of charts summarize a number of estuarine situations up and down the coast. The bottom line is that a substantial amount of the nitrogen problem in our estuaries is from nonpoint source. In these cases, easily more than 50 percent of the problem is due to nonpoint sources. By contrast, the phosphorous loadings attributable to nonpoint source are substantially smaller.

Let me turn to the all-State summary of State nonpoint source activity. Under the 1987 Amendments to the Clean Water Act, we have for the first time been requiring States to prepare assessments and nonpoint source management plans. We now have received from 49 States and territories listings of those areas impacted by nonpoint sources. We're in the process of reviewing those right now. We have provided you with a list of those States in the chart package.

In the case of the 29 coastal States, we've received 28 lists and, again, are in the process of reviewing those. Twenty-seven of the 29 coastal States are expected to submit a complete nonpoint source assessment by the statutory deadline of August 4th, 1988.

In the case of the management programs, we will have management programs from 27 of the 29 coastal States by the statutory deadline. However, my impression is that the majority of these documents will be submitted to the Regions as drafts.

Finally, I think you've already heard about EPA's approach to dealing with the estuarine situation. We have under the Clean Water Act a National Estuary Program. We have convened six NEP Management Conferences existing estuaries and we're now in the process of final review and expected approval of six additional estuaries.

This effort is in concert with initiatives undertaken prior to the Clean Water Act amendments to accomplish a Near Coastal waters environmental attack program. I think Tudor Davies in previous testimony explained that program to you.

That concludes my remarks, Mr. Chairman. I'd be glad to answer questions at the end of the panel.

[The prepared statement of Mr. Whittington can be found at end of hearing.]

Mr. STUDDS. Thank you, Sir.

Let me just say that I understand, Mr. Myers, that at some point you may have to leave for other congressional committee procedures. Please feel free to do that. You don't have to raise your hand or signal or anything.

Mr. Whittington, I appreciate your attempt to simplify this even to the point where members of this Subcommittee can understand it. I have to ask you, however—you may have overdone it with your cover [referring to the cover of Mr. Whittington's attachment to his statement]. This is a "tractor". [Laughter.]

This is a "farm". This is a "fish". What is that [indicating]?

Mr. WHITTINGTON. It looks like a crab to me, Mr. Chairman. [Laughter.]

Mr. STUDDS. Oh, I thought it was a leaf.

Mr. SAXTON. Our staff says it's a plankton. [Laughter.]

Mr. STUDDS. Well, if there's any consensus before the end of the day, I'd love to know what it is.

Mr. Studds. Mr. Richard Nichols of the Department of Environmental Quality of the State of Oregon.

Mr. Nichols?

STATEMENT OF RICHARD NICHOLS, ADMINISTRATOR, WATER QUALITY DIVISION, OREGON DEPARTMENT OF ENVIRONMENTAL QUALITY

Mr. Nichols. Chairman Studds, in addition to being the administrator of the water quality division of the DEQ, I'm also the chair of the nonpoint source subcommittee of the Association of State and Interstate Water Pollution Control Administrators.

Currently, Oregon is finishing up its section 319 nonpoint source assessment. While we've looked at rivers, lakes, groundwater, and estuaries, I thought I'd just give you a little bit of an idea of what we found in our estuaries.

We have 126,000 acres of estuaries in Oregon. Of that, we looked at about 115,000 acres. Of that 115,000 acres, about 30,000 acres were found to be moderately impaired due to sediment and to fecal coliform—bacteria, in other words. The significance of the bacteria is that it affects the time and the ability of shellfish growers to harvest oysters and other shellfish products.

In general, our nonpoint source assessment showed that we have nonpoint source problems from all sorts of activities—agriculture, forestry, urban, including failing septic tanks, general storm runoff, combined sewer overflows, and construction wastes. They come from private, State, and Federal lands.

One of the issues that became very obvious as we went through that is that there is very little quantitative data to base an assessment on, and much of our assessment was done on qualitative data, observations of professionals, peoples like fish biologists, professional land managers. Consequently, the data is qualitative more than quantitative.

The reason for that is that our ambient monitoring program in Oregon, as I think in other States, has centered on the larger streams that are affected by point sources. Nonpoint source tends to affect the smaller, more rural streams, and we have neglected or have not had the resources to put to monitoring those streams.

In Oregon we try to manage our water quality to protect beneficial uses: drinking water, fisheries, irrigation water, et cetera. We establish standards which, if we meet those water quality standards, will protect those beneficial uses.

We have very effective management tools, I think, for dealing with point sources. We issue a permit and have discharge limits. We have monitoring requirements and we can pretty well keep track of the point sources.

The same tools do not work very well for nonpoint source because the points of discharge are not visible and you cannot set limits on it and you cannot monitor them. Consequently, as Mr. Whittington said, and Mr. Myers talked about utilizing best management practices. In Oregon I think best management practices have been fairly effective—in fact, very effective in certain programs.

In Oregon, which I think is unusual from other States, we have a forest practices act that is administered by our Department of Forestry. That act provides for standards through administrative rules to regulate silviculture practices on State and private land.

What we find is that application of those standards—the improvement since 1972 when the act was enacted, water quality is a whole lot better than what it was before. We still, however, do not have quantitative data monitoring to verify, in fact, that water quality standards are being met. One of the things that we're doing as part of our 319 process is to bring water quality into that loop. We'll develop memorandums of agreement, which we already have, but we'll expand on those memorandums of agreement and include monitoring requirements that will then be evaluated to determine whether or not the best management practices are, one, being implemented or, two, are effective and not deficient. In either case, then, do whatever needs to be done, modifying BMP's, to assure that water quality will be met.

There are some other issues that we're dealing with in Oregon that are beginning more to show the importance of the nonpoint source. We are currently in the process of beginning to develop total maximum daily loads on some of our streams. What we're finding is that without an effective nonpoint source program, the burden of cleaning up some of our streams is going to fall to a greater extent on the point sources.

As I said before, we have some estuaries that are impacted by nonpoint source and point source, for that matter, primarily bacteria. The Interstate Shellfish Sanitation Conference has very stringent standards, and what we're finding is that shellfish growers and harvesters are not able to harvest their oysters when they would like to and that's causes quite a bit of problems.

Finally, as we sample our State's groundwater, we are finding that nonpoint source has a significant effect on our groundwater resources—from failing septic tanks, from cesspools, particularly in mid-Multnomah County where we're currently in the process of sewering a population of about 56,000 homes, I believe, at a cost of somewhere around $360 million.

We've got a pretty good handle on sewage. What we don't have a handle on very well is the pollution in our groundwater from agricultural activities, most notably nitrate, but also pesticides.

So, quickly, where are we relative to nonpoint source in Oregon? We're going to continue to work by dealing with local entities and other agencies that are on the land to do our nonpoint source program—the Forest Service, for instance, on Federal lands, the Department of Forestry and the Department of Agriculture, and local entities, perhaps counties, soil conservation districts, can do the program at the local level. We do not have the resources to get out at the local and do the programs.

Second, we're going to begin to tie in water quality to the evaluation of those best management practices to, in fact, be sure that water quality is being protected.

Third, because we have limited resources, as do the other agencies, we are going to target our activities and our approaches on streams on a priority basis. Frankly, the priority system hasn't been developed yet and it probably will be based on our State clean water strategy that we're working on with EPA.

I've touched on some of the subjects here that are important to us. The invitation letter that I got I received a little late, so I didn't address its questions in my testimony. There are some questions in there that I could expand on that I haven't done here. I would offer to answer questions as you may see fit.

[The prepared statement of Mr. Nichols can be found at the end of hearing.]

Mr. STUDDS. Thank you, sir.

Mr. Robert Adler of the Natural Resources Defense Council.

STATEMENT OF ROBERT W. ADLER, SENIOR ATTORNEY, NATURAL RESOURCES DEFENSE COUNCIL; ACCOMPANIED BY PAUL THOMPSON, RESOURCE SPECIALIST

Mr. ADLER. Thank you, Mr. Chairman.

My name is Robert Adler. I'm a senior attorney with the Natural Resources Defense Council.

Over the past year and a half NRDC has been conducting a detailed study of nonpoint source control programs around the country. With me today is Mr. Paul Thompson, who is the principal researcher on that project.

I will be discussing the nonpoint source contribution to coastal water pollution, and I would also like to try to put my finger on what we believe is a major part of the problem, which is a lack of adequate Federal leadership in controlling nonpoint source pollution.

I would like to discuss three examples of that. Then I would like to ask Mr. Thompson to explain, based on his research, what a good Federal and State coastal nonpoint source management program ought to look like.

But, first, Mr. Chairman, you asked for suggestions as to a perhaps more evocative name for nonpoint source pollution. I would like to suggest one. We think that nonpoint source pollution ought to be renamed as pointless pollution.

Mr. STUDDS. Well, we have nowhere to go but up. [Laughter.]

Mr. ADLER. I'll try to do better.

First, what is the relative contribution of nonpoint source pollution to coastal pollution? As Mr. Whittington pointed out, according to EPA figures which are derived largely from State studies, nonpoint source pollution is more often than not the major cause of water pollution both inland and along the coastal waters.

The key to this problem is land use and growth. Major growth leads to land use problems which lead to nonpoint source pollution. Population in coastal counties increased by 69 percent between 1950 and 1980, making population density along our coastline about five times greater than inland. By 1990, it is estimated that 75 percent of the U.S. population will live within 50 miles of the coastline.

Prime examples: the State of Florida reports that virtually all of its estuaries and coastal waters are polluted to a large degree by nonpoint source pollution. Pollutants include sediment, nutrients, and toxants, and effects include fish kills, algal blooms, and swimming bans.

As Mr. Whittington pointed out, the Chesapeake Bay also has been proven to be largely affected by nonpoint source pollution.

I think it's safe to say that at the moment we're losing the battle against nonpoint source pollution along the Nation's coastlines, but certainly not because we haven't recognized the problem for many years.

As early as 1972, in the comprehensive amendments to the Clean Water Act, Congress identified nonpoint source pollution as a major part of our water quality problems and directed the States, through a comprehensive water quality management planning process, to address nonpoint source pollution.

Major reaffirmation of those principles was enacted in the 1987 Water Quality Act, but in our opinion States have not taken nonpoint source pollution control seriously, at least not nearly as seriously as they've taken the point source control problem.

Also in our opinion, a primary cause of this inattention is a lack of adequate Federal leadership. I would like to cite three examples.

With due respect, the first example is a problem that derives in this body. That is a lack of funding, adequate funding, for both nonpoint source programs and coastal zone management programs. The primary and most imminent example is that the 1987 Water Quality Act authorized $100 million a year for State section 319 planning programs, but to date no funds have been appropriated under those authorizations.

This year, out of the $100 million authorization, it appears that perhaps $25 million will squeak by, and we certainly urge you all to support whatever funding for those programs you can.

There are two ramifications of these omissions. One is that States can not adequately staff and fund their programs, but second, and perhaps more important, what is the message that's being sent to the States? If Congress provides strong mandates in the law but does not appropriate adequate money, the States aren't getting the message that Congress is serious about the problem.

There is also a severe irony in the lack of funding. The country has spent tens of billions of dollars on point source controls for sewage treatment plants over the past decade and a half. Yet, when EPA is saying that nonpoint source pollution is half or more of the problem, we won't appropriate $100 million a year. It sounds like a bargain that we're missing.

The second example of a lack of adequate Federal leadership is urban runoff of toxics, or stormwater. NRDC has been fighting with EPA for 15 years to achieve adequate regulation of stormwater, and we've been in court three times to try to win the battle. We've won a few battles, but we haven't won the war.

In 1987, Congress finally set firm requirements for stormwater control, but already indications are that EPA is not living up to congressional intent. First of all, even though the 1987 act gave EPA significantly more time to come out with stormwater regulations, it appears that they're going to be at least a year late already.

Second, EPA is planning to narrow significantly the scope of stormwater control by defining municipality as only "incorporated municipalities." The Clean Water Act defines municipality as a municipality, a county, a parish, a town, a borough, anything with jurisdiction over water quality. By only regulating stormwater from incorporated municipalities, EPA is significantly narrowing the scope of those regulations.

Again, what incentive do States have to control urban runoff adequately if they're not getting the right message from EPA?

Finally, we've had a number of meetings with EPA officials regarding their degree of oversight over the State section 319 planning process. The message that we're getting is that the criteria for reviewing State programs are vague; and that EPA is not clearing linking the nonpoint source programs to water quality improvements. I'm certainly glad to hear that Oregon is beginning to do that, but EPA is not requiring it. Again, States are given a message that causes them to have little incentive to do more than the bare minimum. Unless that message changes, we suspect that States will not do more than the bare minimum.

I'd like to turn to Mr. Thompson now and ask him to describe what we believe proper State coastal nonpoint source programs ought to look like.

Thank you.

Mr. STUDDS. Mr. Thompson?

STATEMENT OF PAUL THOMPSON, RESOURCE SPECIALIST, NATURAL RESOURCES DEFENSE COUNCIL, INC.

Mr. THOMPSON. Good afternoon.

My name is Paul Thompson. I'm a research associate with the Natural Resources Defense Council. I appreciate this opportunity to share with the Merchant Marine and Fisheries Committee some of the findings of NRDC's investigation into nonpoint source management.

We have heard many State and local officials from coastal States express deep concern over the management of nonpoint source pollution. They feel that current pollution control efforts often are overpowered by the severity of the problem. They feel that their options are severely limited by the fact that nonpoint source pollution is intimately related to land use, and control over land use, essential to nonpoint source control, is not a weapon in the arsenal they have been furnished.

Certain themes are repeated by State and local officials when they talk about their problems with Federal and State nonpoint source management. These include lack of funding, improper political considerations that intrude on water quality protection, poor policy development and planning, and vague and adequate leadership and oversight. All of these are common concerns of State and local officials.

NRDC agrees, we cannot achieve better nonpoint source control until we develop adequate political and governmental support. The goal of Federal, State, and local nonpoint source managers should be to develop ongoing, integrated local and regional plans. They need the power to act at the regional as well as the local level. They need adequate legal authority and discretion to take whatever action is necessary to control a given nonpoint source problem wherever it originates.

Unfortunately, many existing programs often fragment and fall prey to political considerations. Nonpoint source control gives way to growth and economic development as local governments are forced to compete for economic growth. This is why we need an aggressive, clear, and well-enforced set of standards to measure program effectiveness.

Current Federal efforts to control nonpoint pollution are not aggressive enough, but better models for nonpoint source management do exist. Examples of programs with far more specific criteria include the Coastal Barriers Resources Act and the National Flood Insurance Program. Under these systems, States are denied certain Federal funds unless well-defined, comprehensive action is taken to reduce the impact of development in critical areas. But, ultimately, Congress has to consider mandatory Federal nonpoint source programs if the States will not or cannot do the job.

Based on our research, we feel that Federal nonpoint source programs and Federal review of State programs should reflect the following principles:

First, nonpoint source control in coastal areas needs to reach beyond the coastal zone. Much of the pollution of coastal waters comes from upstream.

Second, land use planning is needed to control the cumulative, nonpoint source impact of urban development.

Third, from a water quality protection perspective, voluntary cost-share programs are not the most effective nonpoint source controls, and States should not place too much faith in them.

Fourth, disputes between local governments over nonpoint source management must be resolved at the State level to prevent localities from sacrificing water quality to attract growth.

Fifth, efforts should be tailormade to local water quality problems because each watershed will need to be treated a little bit differently.

Federal programs must be changed to reflect these principles. Congress must exercise more oversight of EPA, NOAA, and USDA activities and those of other relevant agencies. Specifically, they need, one, to insure that detailed, meaningful agreements are reached between Federal agencies that conform to the requirements of the Clean Water Act. For example, currently NOAA and EPA do not formally coordinate the nonpoint source management aspects of their respective coastal zone management and water quality protection programs.

Two, see that EPA develops and enforces water quality criteria so that we have a meaningful way to track and monitor the successes and failures of the program. Currently, standards do not exist for many nonpoint source pollutions.

Three, make sure that Federal officials require basinwide and water quality-based approaches to controlling the problem. Pollution doesn't respect jurisdictional boundaries, so regional programs are badly needed.

Four, coastal nonpoint source programs must involve control beyond the coastal zone. They must be based on clear water quality goals. Officials need to aim for pollutant reduction targets for specific watersheds like the Chesapeake Bay program's nutrient reduction goal.

Coastal programs must use local land use controls that enable them to prevent cumulative impacts as well to control major new developments that harm water quality.

Finally, Congress should discourage the use of voluntary agricultural cost-share programs as primary nonpoint source controls. History has proven that these programs cost too much and deliver too little.

Thank you.

[The prepared statement of Messrs. Adler and Thompson can be found at end of hearing.]

Mr. STUDDS. Thank you, sir.

Finally, we go to Mr. Joseph Goffman. I assume the Environmental Defense Fund will have an entry in our contest to replace the elegant praise which describes the subject matter of our hearing. We have two suggestions on the table so far, as you've heard, one indirectly made by EPA to call it "everything else" and the suggestion of Mr. Adler which has as a drawback, which has been pointed out up here, the tendency around here to use either acronyms or initials, which would be a distinct drawback for your suggestion. Think about it for a moment.

Mr. ADLER. I hadn't considered that.

Mr. STUDDS. Well, I'd think you'd better. [Laughter.]

Mr. Goffman?

STATEMENT OF JOSEPH GOFFMAN, STAFF ATTORNEY, ENVIRONMENTAL DEFENSE FUND

Mr. GOFFMAN. I think I'll submit EDF's suggestion in writing. [Laughter.]

There are other people in my organization who would love to participate in formulating it.

My name is Joseph Goffman. I'm an attorney on the staff of the Environmental Defense Fund. EDF appreciates the opportunity to share with you, Mr. Chairman and members of the subcommittee, the results of a two-year study entitled, "Polluted Coastal Waters—The Role of Acid Rain." A copy will be submitted with the request that it be included in the record.

The study was carried out by four atmospheric scientists led by Dr. Michael Oppenheimer, an atmospheric physicist, and Dr. Diane Fisher, a chemist. I will confine my remarks to summarizing the contents of that report.

The study points to new ways of thinking and research that need to be pursued with regard to the problem of acid rain and with regard to strategies that must be adopted to prevent further deterioration of our coastal waters and ecosystems.

Our analysis shows that acid rain is not just a threat for fresh water lakes and fish and forests, but it is contributing to the decline of our coastal waters as well. Our eastern coastal waters are currently receiving enormous inputs of nutrients, especially nitrogen and phosphorous. In most instances, the growth of algae in marine ecosystems is determined or limited by the level of nitrogen put into the ecosystem. Adding nitrogen is like spreading an algae fertilizer over the system. Algae growth increases, allowing the algae to drain the water of oxygen and to block subsurface sunlight penetration.

Since oxygen and sunlight are essential to the survival of other marine life, including commercial species like oysters, clams, crabs, and lobsters, the algae essentially suffocate other organisms in the ecosystem. In addition, some forms of algae are directly toxic to fish while other forms of algae destroy underwater plants. Toxicity and oxygen-depleting effects of algal blooms lead to massive kills of aquatic organisms.

Because of the algae growth, large portions of our estuaries are becoming dead seas, unable to support the life that once flourished there. Now these conclusions have long been shared by scientists, policymakers, and resource managers who have been pursuing strategies for limiting the nitrogen loadings in coastal waters and estuaries.

What our report reveals for the first time, however, is that a major source of nitrogen loadings is atmospheric nitrate deposition, which is one of the components of acid rain. Our report calculates that acid rain contributes 25 percent of the nitrogen attributable to human activities which enters the Chesapeake Bay, a level of input which makes it second only to fertilizer runoff as a source of anthropogenic nitrogen in the bay.

Preliminary analysis of the Long Island Sound, the New York Bight, and the Neuse River Basin, an estuary in North Carolina, indicate a similar role for acid rain in these waters as well. There are several paths for or forms of nitrate input into coastal waters. We found that about one-third of the nitrate that enters the bay—that is, the Chesapeake Bay—is directly deposited from the atmosphere either in the form of acid rain or through direct dry deposition. The rest enters the bay through the runoff of nitrate that is originally deposited on the land either in the form of acid rain or through direct dry deposition nitrate on the land.

Given that we are talking about a 25 percent contributor, nitrogen, we believe that we have identified an important source of nitrogen to estuaries which has previously been overlooked in large part. The EPA and the Chesapeake Bay States have already established the goal of 40 percent reduction of nitrate inputs in order to halt the deterioration of the bay.

Reduction of nitrogen inputs from agricultural runoff and point sources have already been proposed. Of course, we support these measures. But if we ignore the large inputs of nitrogen from acid rain and dry deposition, we will never reach the ultimate reduction goals, and the purpose of the reduction of nitrogen from these other sources will be undermined.

Atmospheric or acid rain nitrate comes from motor vehicles, power plants, and factories. If no further controls are put on these sources, they are projected to increase by 40 to 60 percent over the next four decades, making acid rain the major manmade nitrogen source of the future.

That is why we conclude that emissions of oxides of nitrogen, the precursors of atmospheric nitrate, must also be cut by 40 percent through measures like energy efficiency, technology, retrofits of existing stationery sources, and advanced boiler, smokestack and automobile tailpipe technology on new sources, all of which have to be brought about by both State and Federal action, including the strengthening and reauthorization of the Clean Air Act.

Thank you very much, Mr. Chairman and members of the committee.

[The prepared statement of Mr. Goffman can be found at end of hearing.]

Mr. STUDDS. Thank you, sir.

Let me ask a very, very general question both because I speak as a layman and because I want to try to keep at least initial questions in English, as I said. For lack of a consensus replacement for nonpoint source pollution—I guess we're stuck with that even in my own questions, although I am leaving aside for the moment acid rain for the purposes of this question—given the fact that nonpoint source pollution is, indeed, everything else, everything except that which comes out, I gather, of a particular identifiable pipe in a particular stream or body of water, what is a nonpoint source pollution program? We're talking everything else. We're talking a universe of things. What kinds of things come under the category of a program to deal with this broad a universe of sources?

What does one do in the most general sense? What kinds of attacks need to be launched?

Mr. THOMPSON. Mr. Chairman?

Mr. STUDDS. Anybody? Yes?

Mr. THOMPSON. I would characterize the kinds of programs that a State would be interested in, in terms of nonpoint source control, in two ways. One would be State level programs and the other would be local programs.

State programs would consist of minimum requirements for localities to meet in developing local water quality protection programs, which would include things like comprehensive planning, modifying their long-term plans to take into account nonpoint source impacts into local water bodies, and also site plan reviews, and all of the traditional things that localities become involved in at that level.

Also, States themselves can become directly involved in nonpoint source controls in terms of minimum requirements for agricultural best management practices in targeted watersheds; and they can also play a large role in providing technical assistance to local governments as well as to local units of State government, such as the soil and water conservation districts that would, in any program, be very involved in an agricultural nonpoint source effort.

Mr. STUDDS. So from the perspective of agriculture, I gather it has to do with limiting either the quantity or the nature of chemicals that are placed into the ground; is that right?

Mr. THOMPSON. Yes, it is.

Mr. STUDDS. What does a locality do? If you're worried about nonpoint source pollution and started off with a general category of things that people at the local level will do, what you do, what do you focus on if you're a local area of government and you're concerned about this?

Mr. THOMPSON. Well, there's a very wide array of things that localities have been involved in. These include, as I mentioned before, planning to change around your land use maps and your zoning ordinances to reflect concerns over water quality, requiring all new developments to install best management practices.

Mr. STUDDS. What does that mean?

Mr. THOMPSON. Well——

Mr. STUDDS. I understand the words, but I don't understand the——

Mr. THOMPSON. Well, for instance, if a developer wanted to build a subdivision with 500 garden apartments, a locality that wasn't interested in nonpoint source control would let that developer build the subdivision according to his own specifications, according to his own economic profit motivation. A locality that was interested in nonpoint source protection would require that that development be built according to their own water quality considerations, which would include things like infiltration devices which intercept runoff from streets and yards to be filtered through the ground instead of running directly into storm sewers or directly into adjacent water bodies. It would include either individual or regional detention basins which trap the runoff from the same areas except release it at a slower rate into receiving water bodies after nutrients or sediment have settled out or been removed by biological processes.

Mr. STUDDS. Okay. Does anyone else want to respond to that little generality? Mr. Nichols?

Mr. NICHOLS. Well, Mr. Chairman, let me point out that one of the interesting things about nonpoint sources, what works in agriculture or forestry I don't think works very good in urban runoff.

Let me tell you some of the things that we're doing in urban runoff. Right now we're working in the Tualatin Basin which is close to Portland. We've established a TMDL based on phosphates and nitrogen, and we're going to be talking to—talking, we're going to be requiring the counties and the cities to develop plans on how they're going to deal meeting total maximum daily loads for particular stream basins within the Tualatin Basin.

Through that, they may end up establishing site plans, as the gentleman over here discussed, or reviewing site plans to be sure, one, that construction runoff to control erosion both during and after are controlled; require some sort of a planning or an engineering system to assure that there is retention to control phosphates, which we've found to be a problem in the Tualatin Basin; to assure that wetlands that are located in the basin are preserved and that maybe additional ones are constructed to try to remove some of the phosphates before they get into the river itself—some of those things.

One of the things I think we're going to do in Oregon is probably tie stormwater permits that are required in the new Clean Water Act into our nonpoint source program, and it's going to be kind of a combination of those two efforts.

In forestry in Oregon it's a little bit different. We've got an agency that can require permits and review harvesting activities and the construction of roads, so we can work pretty easily on having that entity review what's going on.

In agriculture I think it's going to be more from an educational standpoint. We're going to have to find out what the problem is and be able to educate people on different practices that they can employ in order to minimize the release of whatever chemicals there are. It may involve using less chemical, which is probably one good way to do that; it may involve timing irrigation practices such that you don't put the chemical on and irrigate and wash it all down into the groundwater or out in the creek; or a combination of those things.

I think it's a combination, and you've got to take a look at a particular problem and assess what the problem is and figure out what are the best management practices. Then you've got to go out and educate the folks that here's what you need to do.

What we're hoping, particularly in our groundwater, is to show that it's a win-win solution. The less chemical they have going into the groundwater, the less chemical they have going in the stream, the less money they have to pay out. That will keep their costs down and will keep it out of the water.

Mr. STUDDS. You won't get anywhere around here with common sense; you know that. [Laughter.]

Mr. NICHOLS. All right.

Mr. STUDDS. It's worth a try.

Mr. Whittington?

Mr. WHITTINGTON. Yes, sir. I would answer your question this way: a series of events have to take place. First event is to identify impaired and threatened waters, and that's the approach the Clean Water Act Amendments of 1987 take. That is what the States are doing right now in conjunction with EPA.

Once you've identified those waters, then you have to find out the sources where the problem is coming from. Agriculture has been mentioned, but there is also urban runoff, forestry, mining, and airborne sediments in the waters. There's a whole host of these things, and this job is tough, extremely tough.

You know where a pipe is and you can monitor what's coming out of it, but the nitrogen from nonpoint sources just kind of shows up in the Chesapeake Bay and somebody has to make some judgments about its origin. It takes a considerable bit of judgment to determine where it comes from.

By the way, I might say that we did include in our Chesapeake Bay analysis an assumption that 20 percent of the nitrogen came from sources such as airborne pollutants.

Having identified the waters and decided what the sources are, you can then take steps to control or manage the sources.

This is where another tough aspect of dealing with nonpoint sources comes in, namely, obtaining public support. Getting public support is not a quantifiable sort of thing and it's not an engineering sort of thing like point sources.

Strong public support, as we've seen, has been a key to getting the Chesapeake Bay effort underway and keeping it going. That means education, as Mr. Nichols mentioned. That means looking at statewide programs such as for construction.

For instance every time you pass a construction site in Maryland it will have bales of hay around the site to prevent runoff from getting into the streams and ultimately into the Bay. That means local ordinances. In some circumstances control of nonpoint source pollution may mean local land use controls. But those are clearly State and local decisions and I'd have to say I don't think there is a role for EPA in such decisions. My point is that dealing effectively with nonpoint source pollution depends upon key decisions and actions at the State and local levels and won't happen without strong public support.

Lastly, you don't want to ever let up on monitoring somehow to determine what is actually happening or not happening in the stream because of the assumptions made in those previous steps that are a little different from the kinds of assumptions you make regarding point sources. Therefore, you've got to monitor to be sure you're getting what you thought you'd get and that you're not losing the war.

Mr. STUDDS. Thank you, sir. I've got lots of questions, but, in fairness, I'm going to go to the other members.

The gentleman from New Jersey?

Mr. SAXTON. I've enjoyed your testimony very much and I want to thank you for being here to bring to us a wide range of experiences and ideas about this subject which I think is very important.

I noticed in a great deal of the testimony that there was a lot of emphasis placed on runoff control; that is, control of those large amounts of water just running off directly into the streams without the opportunity to be filtered through land or wetlands or whatever other natural barriers there are. I know that that is an important consideration.

Our home State of New Jersey has just recently passed something known as the wetlands act to try to provide protection for those areas that are there for that purpose. But I'm wondering if, beyond the runoff control aspect of nonpoint, rural pollution, if there is much in the way of talk about the control of the use of chemicals, the control of the use of nitrates, the control of the use of whatever other types of chemicals there are out there that are being placed on the ground that perhaps shouldn't be, perhaps there are replacements for those, perhaps there is no real need for as much of them.

I am wondering if any of you have any direct knowledge of programs that would affect that aspect of nonpoint source pollution.

Mr. NICHOLS. Let me speak first, if I may. In Oregon certainly that's one of the alternatives. It's a little bit difficult for the Oregon Department of Environmental Quality to deal with how pesticides are applied. The way FIFRA is set up, the Federal Insecticide, Fungicide, and Rodenticide Act, whatever it is, the labeled instructions are presumed to protect water quality. In some cases they may and in some cases they may not.

When we were in the process of developing an aquifer management plan for the Ontario area where we've found Dacthol, which is a soil fumigant, in the groundwater, and I think we'll be looking at different alternatives. We'll be working with the Department of Agriculture and the State of Oregon to see if, in fact, there may be other alternatives that can do the same thing.

From our own standpoint for the department, we don't have the authority to do that.

Let me make one other point: nonpoint sources, particularly in groundwater, aren't very well defined in State statutes. While I think our department has the authority to do it, we're going to try to get some legislation this year at the State level to try to address that a little more clearly.

Mr. THOMPSON. I think there are also some other examples that might be interesting. For instance, in Nebraska, the Central Platt Natural Resources District, in that area they have developed some regulations on the application of nitrate fertilizer that require, based on the quality of the groundwater underlying the area in question, consideration of the timing and amounts of fertilizer applied. In other words, in some areas a certain amount of fertilizer is allowed, whereas in other areas farmers have to test their soil and then from those soil tests they have to apply a given amount of fertilizer. If they apply any more, they are out of step with the regulations, and penalties can be assessed. This is all based on a very detailed study of the nitrate concentrations in the groundwater in the area.

Also, in California some counties have developed regulations that require dairy farmers to moderate the amount of manure that they apply to their fields in order to dispose of it. A lot of States don't have any requirements, so a farmer can pretty much put as much as he wants to on his land. This has caused a lot of fecal contamination and nitrate contamination with groundwater, but a few counties in California have developed local ordinances that require certain limits on the amount of manure per acre that can be applied.

Of course, in small localities and places scattered across the country, there are specific bans on the use of certain pesticides, mainly Aldecarb, such as in Long Island and in some counties in Wisconsin. State and local efforts have restricted the use of these chemicals in specific areas.

Mr. SAXTON. Thank you.

Mr. Goffman, last week I had an interesting visit with some people from my district in my office. We have not talked before, but I appreciate what you had to say about acid rain and have felt urgency with regard to that problem for quite some time.

Let me just ask this question this way: I had a visit from some folks in my office this week, and they came in and they wanted to talk about acid rain. They told me that there was probably no great urgency about an acid rain problem because it probably wasn't causing any damage to the environment and, if it was, don't worry about it because with technology changing it will go away anyway.

Tell me how you would react to that kind of a statement.

Mr. STUDDS. Calmly. [Laughter.]

Mr. GOFFMAN. I guess on some level—in a different context, I might agree with that. There are technological solutions to the problem of acid rain, but from everything we've seen, from what we can tell about the development of, say, the clean coal program, we really need a legislative impetus behind making sure that the proper technology is applied to controlling the emissions of automobiles and power plants.

Let me try to put that simply: the technology is there to control oxides of nitrogen emissions from cars and power plants, but I think that without some kind of legislative mandate that would be applied, it won't happen. It certainly won't happen fast enough—to prevent the deterioration that we're already seeing in coastal waterways as well as in forests and in fresh water lakes.

Mr. SAXTON. We've obviously seen a great deal of evidence that Mr. Whittington, I believe, pointed out earlier. I think it was estimated that in whatever body of water it was, perhaps the Chesapeake Bay, 20 percent of the nonpoint pollution problem was related to acid rain. We have evidence of that type, and yet there are those who say that there is no evidence to directly relate degradation of water in a particular area to acid rain.

Do you have evidence that you can point to that will help us make that case?

Mr. GOFFMAN. I suppose that what I would fall back upon is essentially the body of the report that I tried to summarize—that there are actual monitoring stations in the Chesapeake as well as in other coastal waterways which show certain levels of nitrate that cannot be adequately accounted for without looking at atmospheric deposition. That is the deposition of the nitrates that originate from acid rain precursors. That's the general evidence that I can point to that shows the direct link between the emissions that we need to control and the damage that's being done to the coastal ecosystems that are in jeopardy.

Mr. SAXTON. Thank you.

One more question: Mr. Whittington, according to the charts attached to your testimony, EPA Region II, which includes my home State of New Jersey, New York, and Puerto Rico and the Virgin Islands, has not received any section 205 monies from the Clean Water Act, which is setasides from construction grants allotment monies for nonpoint source control.

Given the problem that we've had, particularly in the New York Bight area and other tributaries and estuaries in the area, can you tell us why Region II has not received any funds for that program?

Mr. WHITTINGTON. The money is set aside under the reserve program within the construction grants program, and the money is available to those States that want to use it. In fact, if the State doesn't use it, there is some minimal amount—I believe it's $100,000—which is lost to that State.

Mr. SAXTON. Are you saying that none of the States, none of the areas in those States, or whoever is eligible in Region II, did not apply for monies?

Mr. WHITTINGTON. I could certainly furnish that information for the record.

[Material to be supplied follows:]

REGION II REQUESTS FOR FUNDS UNDER SECTION 205(j)(5)

Region II informs me that New Jersey's application for Section 205(j)(5) funding for both FY 1987 and FY 1988 was received on June 16, 1988. New York's application for both years was received on November 9, 1987, but the workplan detailing the tasks for which the FY 1987 funds would be used was not received until June 2, 1988.

The award of funds to both States is further complicated by the fact each state's fiscal year does not coincide with the Federal fiscal year. The result has been that workplans are negotiated 6 to 8 months after Federal funds are available.

As of this date neither Puerto Rico nor the Virgin Islands has applied for either FY 1987 or FY 1988 funds under Section 205(j)(5) of the Clean Water Act although Region II is expecting applications from both.

Mr. **Whittington**. We make those grants when States apply for them. It's an ongoing activity.

There's no sinister reason why Region II is trying to hold back Section 205(j)(5) funding from particular States.

Mr. **Adler**. If I may, Congressman, the 205(j) monies are for general water quality management funding for the entire State program. So, in the absence of specific funding of nonpoint source control programs under section 319, the States are put in the position of robbing Peter to pay Paul. In order to use the 205(j) monies for nonpoint source programs, they need to take them away from other elements of their water quality program.

Mr. **Saxton**. You're saying that our States may have opted to use their part of the money for some other purpose?

Mr. **Adler**. It's possible; I don't know the details.

Mr. **Saxton**. Mr. Whittington, if you would check on the reason for that and get back to us, we'd appreciate it very much.

Mr. **Whittington**. I'd be glad to do so.

Mr. **Nichols**. Well, the 1987 act essentially provides two setasides, 205(j)(1) which is the general planning money and 205(j)(5) which was specifically set aside to do the nonpoint source work for 319. So you can have essentially two cuts at it.

Mr. **Whittington**. But that's at the expense of the construction grants program itself. However, the Congress deliberately set that up with a minimum amount to be funded that way, $100,000.

Mr. **Studds**. Is that perfectly clear?

Mr. **Saxton**. I'd like to once again thank all of you for being here today. It's really been very, very helpful, and the information you've provided will be very worthwhile long term. Thank you.

Mr. **Studds**. That last exchange is a minor, but good example of why the general public has no idea in the world what we're talking about. [Laughter.]

Just reflect back on that for a moment. There was not a single comprehensible sentence for someone who is not versed in the letters and numbers of the statutes and everything else. I know you can't talk about it elsewise.

I guess if we take Mr. Thompson's suggestion—it wasn't your suggestion, but if we're going to talk about statutory limits and the amount of manure per acre, it seems to be another case where the Congress is going to have to exempt itself from the law. [Laughter.]

The gentleman from Maryland?

Mr. **Dyson**. Thank you very much, Mr. Chairman.

States that entered into the Chesapeake Bay Agreement—Virginia, Maryland, the District of Columbia, and Pennsylvania—indicate from the press reports and other opinions that have come down from that agreement that the focus has been obviously on point source. In the Chesapeake Bay the emphasis is on the elimination of point source pollution and also nonpoint source from farmlands.

I notice the EPA says about 20 percent of the nitrogen pollution entering the bay is airborne. The Environmental Defense Fund says that figure is actually about 39 percent. Either way, it's very high.

My question is: did the signatories to that agreement place the kind of emphasis on the airborne pollutants that they seemed to have placed on the others. Special emphasis seems to have been placed on farmland runoff.

Mr. WHITTINGTON. I might respond to that to the extent I know. I'm not a signatory to the agreement, but——

Mr. DYSON. Well, your boss was there.

Mr. WHITTINGTON. Exactly.

Mr. DYSON. He signed something; it looked like the agreement to me.

Mr. WHITTINGTON. Well, what I mean to say is that I don't know exactly what information those people had before them in arriving at their decision to sign the Agreement. Our analysis by the Chesapeake Bay Program Office in Annapolis indicated that the 20 percent airborne nitrogen figure was derived from a number of sources other than the ones described in the EDF report. In our view, this figure was taken into account in arriving at the balance, the nitrogen budget, if you will, of the amounts that were tolerable and, therefore, in arriving at the 40-percent reduction target.

I guess the simple answer to your question is that it was taken into account, to my knowledge.

Mr. DYSON. It was at least by you?

Mr. WHITTINGTON. Yes.

Mr. DYSON. You can't speak for all of the various representatives from each of the States?

Mr. WHITTINGTON. That's correct.

Mr. DYSON. The reason I ask that is that I know that the nitrogen removal is the No. 1 priority of the EPA in the cleanup of the Chesapeake Bay. It is a serious problem, regardless of whose figure you take—although, I obviously would prefer your figure, as it's considerably less than the Environmental Defense Fund projection, which would make it almost 40 percent. Maybe you can find out if that point has been raised.

My next question is: who gets the blame for airborne pollutants in the Chesapeake Bay area?

Mr. WHITTINGTON. I think there are other sources as mentioned earlier.

Mr. DYSON. The EPA Chesapeake Bay Program is located on the Chesapeake Bay. If you set out one morning to go after this, which direction would you go? Do you go to the industries of Baltimore? Do you get the cars on the parkway? Is the EPA focusing on this at all?

Mr. WHITTINGTON. No, I don't believe so. According to our analysis we have taken as a given that airborne pollution is occurring. We've made no effort, to my knowledge, to differentiate between the automobile and the other so-called natural sources.

Nitrogen, as I understand it, comes off of the ground, for instance, when fertilizer is applied and becomes airborne, and is thereafter deposited. Nitrogen is in the air, as we know, and, as I understand it, certain amounts also can be airborne and deposited.

I don't know the numbers, and the relative percentage of those may be small.

Mr. DYSON. I was concerned, because we have now in Maryland, or at least in most of the counties on one side of the bay, emission test programs. Has that had any effect whatsoever in reducing any of that.

Mr. **Whittington**. Well, I get my car tested as well, and the things I see at the bottom of that testing chart don't seem to me to be nitrate-type chemicals. We're looking at CO_2——

Mr. **Dyson**. Should they be? Is that something we should look at, that the State of Maryland should look at?

Mr. **Whittington**. I don't know the technologies that well, but I have a suspicion, that if we're looking at automobiles, that we're looking at some fairly major changes in how we go about removing pollutants from automobiles.

Mr. **Dyson**. I don't know what your name is down here at the end.

Mr. **Goffman**. Joseph Goffman.

Mr. **Dyson**. Thank you. I apologize; I can't see it from here.

At the end of your statement, which seemed to be off the cuff, you said that we need to make further changes relative to the Clean Water Act. In light of some of the questions that I've just asked, what is a practical change that can be made?

I spoke to a group of students the other day from American University, and one little girl in the group—or a teenager; she wasn't so little—says to me, "You've got to get rid of acid rain."

I said, "Sure. When?"

Of course, she wanted it done yesterday.

What can we practically do in this place, realizing that the Clean Water Act took six years, I think, to get reauthorized. What is practical?

Mr. **Goffman**. Well, I guess in my first remarks I was really only addressing the Clean Air Act, not the Clean Water Act.

There are a number of—on a technological level, there are a number of things we can do. Our report took care to differentiate between the different kinds of atmospheric nitrogen.

Mr. **Dyson**. What report is that?

Mr. **Goffman**. The report entitled, "Polluted Coastal Waters and the Role of Acid Rain," which essentially was the source of my testimony.

We tried to differentiate between different forms of atmospheric nitrogen, distinguishing between atmospheric nitrate, which is primarily produced by automobiles and fossil fuel-burning power plants, on the one hand, and ammonium, which is the form of nitrogen in the atmosphere that originates from agricultural and some natural sources. So our estimate about the nitrogen—the nitrate input, or the atmospheric nitrate input, into the bay assumed that distinction going in.

To answer your question about what we can do, there are a number of technological things that we can do; that is to say, the technology is available to control those sources of nitrogen. There are things we can do to automobile engines to control the NO_x, the oxides of nitrogen that comes out of the tail pipe.

There are things we can do to automobile engines and automobiles in general to make them run more efficiently so they burn less fossil fuel per mile driven. There are a number of smokestack technologies that can be applied to power plants and, in fact, are being applied to power plants in other countries like Japan and West Germany.

I submit that the way to get there would be to specify levels of reductions legislatively and put the onus on the States and the sources themselves to figure out the best way, whether it be through energy efficiency or technology, other forms of technology, to meet those goals.

I think the forum for doing that or the vehicle for doing that is a reauthorized Clean Air Act.

Mr. DYSON. Mr. Chairman, could I ask one further question of the gentleman from the EPA?

Your agency has been doing a study of the bay for a long, long time. We're now in our third year in the Chesapeake Bay region of a major drought. I travel around the bay to be in my district regularly. I notice the bay grasses and all that thing are starting to come back in a lot of little tributaries that border farmlands. I assume because we're not having the rains that run off various fertilizers, the runoff just isn't occuring.

Is there in your studies appreciable improvement in the water quality, if not in the bay, at least some of the tributaries due to the drought?

I think, Mr. Chairman, what I'm saying is: is there any silver lining to this drought that we're having?

Mr. WHITTINGTON. I don't know the answer to your question directly, but we will provide information to the Committee.

[Material to be supplied follows:]

DROUGHT BENEFIT IN WATER QUALITY

EPA's Chesapeake Bay Liaison Office confirms that the dry summers of the last three years have supported the Baywide resurgence of Bay grasses. The reduced level of rainfall has resulted in minimizing nonpoint source input of nutrients and sediments into nearshore grass habitat.

As part of the Bay Program's efforts to restore and protect the grasses, scientists at the University of Maryland and the Virginia Institute of Marine Science have correlated levels of water quality with growth of the grasses in two of the salinity zones. They have proposed "habitat requirements" (EPA would call them criteria) for chlorophyll *a*, dissolved inorganic phosphorus, dissolved inorganic nitrogen, light attenuation and turbidity. Work is planned to develop habitat requirements for the tidal fresh and remaining salinity zones.

The Liaison Office has proposed use of these habitat requirements as the basis for water quality standards for nutrients in the Bay and will be pursuing the idea as part of its workplan for the next three years.

Mr. WHITTINGTON. In my view, it will be only a delayed effect. Because you're not getting nitrogen uptake in the corn anymore, or the other crops. Therefore, the nitrogen, which is applied when corn or other crops are planted is still in the soil.

When the rains finally do come, and they will, then we're likely to see substantially increased nitrogen carried into the Bay. So what I'm saying is that even if we're not getting as much nitrogen in the Bay at the present time that does not necessarily mean that we're out of the woods.

Mr. DYSON. I understand your point. It's just that I hear from watermen and people who live along the water, and all over the region, that the bay grasses are returning. I would like to believe it's because of all the money that Congress has been so generous in giving to the various States to help clean up the bay, but I'm sure that's not true. I think it's probably more related to the drought than anything else, the fact that, like I said, we're in the third year of a major drought in the region.

If you would check that out, whether that's had any impact whatsoever or not, I would appreciate it.

Mr. Chairman, thank you for your time.

Mr. STUDDS. The gentleman from New Jersey, Mr. Hughes?

Mr. HUGHES. Thank you, Mr. Chairman.

I want to thank the panel, too. This has been a very useful discussion today. I want to thank you, Mr. Chairman, for this series of oversight hearings. They've been very, very productive. Thank you.

I just have a couple of questions. We hear a lot about the pollutant load, but I really have some serious concerns that we really do not have a full understanding, even a good understanding, of the inventory of nonpoint source pollutants that are entering into our waters. Am I wrong?

Mr. WHITTINGTON. I think that's a fair statement.

Mr. HUGHES. So, before we can begin to develop a plan, we have to understand the dimension of our problem. It doesn't seem to me that we've done a very good job of identifying just exactly what our pollutants are regionally. I heard many of the witnesses testify that what we need to do, we need to have more Federal leadership, and I agree with that—there's not very much Federal leadership—and that we need to be addressing the problems on a regional basis. I'll get back to that because I have some concerns about that.

But it seems to me that before we can begin to address the problem realistically, we have to understand just exactly what's going into our waters and we really haven't done a very good job. Do you disagree with that?

Mr. WHITTINGTON. I agree with you that we have not made those kinds of total evaluations of what's going in, what's going out, and so forth. They are extremely difficult to do.

The gentleman mentioned the Chesapeake Bay study that's been going on for some time. It is probably the premiere study of that nature in the country, and yet I think we have still had difficulty. Only now probably can we come up with the kind of information you're talking about for that particular watershed, let alone the whole country.

The approach has been to identify the threatened or impaired waters and to try to work back up the claim and deal with those impaired waters first as a matter of priority. So nationally I think you're right, we don't have that budget, but we're trying to get it, working with the States, in those waters which have the problem.

Mr. HUGHES. Well, it seems to me, if I understand you correctly, what we should do is identify the pollution loads, identify what pollutants are going in to a particular body of water, and identify the uses in the area to find out the contributors. We are working backward.

But it seems to me that—and I'm speaking only for my area because that's the only area that I really can speak with any degree of expertise—that we haven't done a very good job of even beginning that process, which essentially is identifying what the pollutants are first and then trying to find out what the uses are: the agricultural uses, the industrial uses, the contributions of the airborne, the acid rain contributions—so that we can begin to develop a plan to try to begin reducing the incidence of that pollution, to try to develop alternatives to pesticides, if that's what it is; attempting to find other processes that might be more compatible with the environment that will not, in fact, pollute the air.

Does anybody have any comment on that?

Mr. NICHOLS. Mr. Hughes, we've wrestled with the idea of can you establish total maximum daily loads and try to bring that in to nonpoint sources. I think in certain cases you can. I think in the Tualatin we're going to try to do that, perhaps with a computer model.

On the other hand, I think there is some substantial amount of data nationwide. ASIWPCA, of course, in 1985 put together a pretty good assessment of nonpoint source problems. A lot of it wasn't based on quantitative data from which you can then take and establish some maximum loads, but it certainly identifies the problems.

I think a lot of them, particularly ones that I'm most familiar with, in Oregon, where we can begin to redevelop the best management practices and go through that and start to achieve water quality standards in certain areas. Certainly in forestry and I think in agriculture we can do that. When it comes to land use, urban runoff, where we're concerned about the addition of nutrients, phosphates, and nitrates, maybe we're going to have to take a look at the land uses and try to figure out some sort of a budget of what sort of land use would generate a certain amount of loads.

The trouble with that is it takes a lot of data. I'm not too sure we've got the time or the money to generate the data to do that.

Mr. HUGHES. I'm not so sure that developing a national database is going to be helpful because it's my own perception that we're going to have to address these problems on a regional basis. It varies from region to region.

It's similar to ambient air quality—a State can really put in place some very strict measures to clean up its air, but if you're taking bad air from Delaware and New Jersey or from Pennsylvania, it doesn't do you very much good.

It's the same with land use. It seems to me—and I think that's the point you were making—that it can't be done on a community-by-community basis because if one community decides that they want to clean up their act and try to reduce the load, while another community is a major contributor, you haven't accomplished very much.

That takes me to the second area. It's something I fight all the time. I represent five counties. Of course, every one of those counties, to some extent, believes that their problems stop at their county line. It's very difficult to get people to work together on a regional basis. We don't have the mechanisms, often in place, in the States to try to look at regional problems.

So my question is: isn't the State really required to play a lead role in developing the regional strategy to deal with the problem, once we identify it? Isn't that where the delivery system has to take place?

Mr. NICHOLS. In Oregon, I think the State is, in fact, taking the lead on that, but I think we're going to have to rely on the local governments to implement it because I don't think we have the resources in order to apply it at the local level.

Back to the Tualatin, there are mechanisms already at the county level in Oregon to begin to address land use. Maybe Oregon is unique in that regard, but I think in Oregon we can use our land use process to start to get a handle on it.

I think the activity has to be at the local level, but I think you're right, the State has to be the one that's sort of driving it and developing the priorities and the programs and how to get there.

Mr. HUGHES. I wasn't suggesting that it necessarily has to be implemented solely by the State, but municipalities are often limited in what they can do politically because their folks don't want to hear about working with some other county trying to solve their problems. They don't look at it regionally; they look at it from the standpoint of what is needed to deal with the problems in their own backyard.

It's the same thing with communities—they're often very jealous even of what the counties take over by way of authority in countywide planning. We have the same struggle.

Apparently, you're all in accord that you believe that it's going to require some regional strategies. When I say regionally, I'm even talking in terms of bistate, tristate, not just necessarily within a State, to deal with the problems.

Mr. NICHOLS. I agree with you that's it's difficult to get folks together. In fact, on the Tualatin the people on the lower end perceive it as a much bigger problem than the folks at the upper end of the basin.

Mr. HUGHES. Well, one of the points made was that we need to develop management plans, site plans, for future construction. That's a lot easier to do than to try to deal with existing uses where you have to go back and say to existing manufacturing facilities, "Hey, you're harming the environment. We need to begin to reduce the amount of hazardous waste being generated or need to clean up the ambient air quality from your plant." That's going to be very, very difficult.

We haven't begun that process yet. We haven't even begun that.

Do you see anything that would suggest that any leadership has been provided that would begin the process of attempting to reduce the amount of substances, hazardous and other substances, being produced?

Mr. THOMPSON. At the Federal level I would agree with that. I think there are a couple of examples at the State and local level that provide examples of just what you were speaking of, a framework that would induce the localities to work with neighboring localities within a given problem watershed to develop a common water quality plan.

Minnesota has developed a voluntary process that supposedly will have State funds to induce localities to take part in this process. It's called a comprehensive water quality planning process, and it is overseen by a State water resources board that will chair any dispute resolution, solve any disputes between localities; part of the requirements of this very long and complicated planning process is for all governmental entities within a water basin—that's Federal, State, and local entities—to come to one common plan that all localities play a part in. This is expected to provide just the kind of action that you're speaking of, a framework that's provided by the State, but the process itself is carried out at the local level and approved by the State. In order to get funds, the plans have to be approved.

In Florida, the legislature has recently passed legislation that requires localities, all localities, to address water quality in their comprehensive planning process. One of the requirements that localities have to meet is to identify all localities that are impacting their water quality. Essentially, every locality in the State will be identifying each locality that's having an impact on water bodies located in their jurisdiction.

When that identification is made, then they are required to do the same thing—to develop mutually-acceptable plans for water quality, for local water quality management.

These multijurisdictional plans are then encompassed in what are called regional comprehensive plans which are much larger in area, but are approved by regional planning boards, and then finally the entire—all of the regional plans—have to be approved at the State level.

I think we can see the beginnings of this kind of framework developing in certain limited States.

Mr. HUGHES. Thank you, Mr. Chairman.

Mr. STUDDS. The gentleman from Tennessee?

Mr. CLEMENT. Thank you, Mr. Chairman.

Any of you can answer my first question. I understand that the purpose of the conservation programs contained in the Food Security Act was to primarily preserve highly erodible cropland and discourage the conversion of wetlands to cropland. Have any of the programs been effective in improving water quality and how might the law be changed to put a greater emphasis on improving water quality?

Mr. THOMPSON. I'm sure that there have been significant water quality benefits because of the conservation provisions of the Food Security Act. I'm not aware of any current analysis of those water quality benefits. I think that at this point they're just assumed to be occurring, but I think that there are improvements that could be made to those provisions.

The simplest way to describe them would be to have those agricultural programs directly tied to State nonpoint source management programs. In other words, States need to be able to manipulate the Federal agricultural conservation programs for their own water quality purposes, and I realize that there will have to be a certain amount of give-and-take in such an effort because these agricultural programs have their own goals.

But, as it stands now, very often there is such a split between State nonpoint source water quality programs and Federal agricultural conservation programs that you have two separate systems that are really competing for dollars and competing for emphasis. I think that if States could use these Federal programs a little more freely for their own purposes, they would be able to target controls and specific kinds of best management practices for their own water quality purposes, as opposed to just the Federal goals.

Mr. **Clement**. I understand that the Food Security Act requires the Department of Agriculture to revoke all benefits at all property of a landowner with a violation on only one piece of his or her property, and that USDA has, therefore, been reluctant to take any enforcement actions. Is that true and, if so, how would you propose to change the enforcement procedures to remedy the situation?

Mr. **Thompson**. I'm really not aware of that issue to the extent that I could comment on it.

Mr. **Clement**. Anyone else?

[No response.]

Mr. **Clement**. Mr. Whittington, as you know, Congress has yet to appropriate funds for grants to States to carry out nonpoint assessments. Do you or does EPA have any figure in mind to recommend that Congress appropriate for this program?

Mr. **Whittington**. There have been two years of eligibility, as I recollect, 1988 and 1989. The 1989 budget is now going through the appropriation process.

We have not asked for any money in either of those years, to my recollection.

In any event, I think there are a couple of things at play that lead to that position. One is it's extremely tight in a budget sense, as I'm sure you're much more aware than I. That's true in general throughout the Federal activities.

Another key point is that we've only just received the assessment lists and will soon be receiving the completed assessments and the management plans from the States regarding their intentions and how they perceive proceeding.

Also, we do see that there are some monies available under current law via the construction grants program. We've already talked here about the set aside for nonpoint sources, the 1 percent set aside.

In addition in the construction grants program there is money available for nonpoint sources as a part of the governor's discretionary funds.

Obviously, there are many competing demands for these latter funds and, therefore, we can understand that not many governors want to put money into nonpoint sources at this stage, but I think that will come to pass. I think it's something we shouldn't discount.

The Section 319 grants were not funded in 1988, on the premise of no new programs because of the extremely tight deficit situation. We can understand that. Clearly, we'd like to see the nonpoint source issue start to roll.

I would only point out one other thing and that is that the needs in this area are extremely large. The very superficial estimates that I've seen begin at $25 billion, and go up from there.

Obviously, $100 million or $25 million Section 319 is a lot of money. I don't want to play it down. At the same time, I think we have to see these amounts in the context of the needs. There are big needs and we must recognize the significant Federal money that is available through other sources.

I guess that would be my point and why our position has been not perhaps as enthusiastic as some would have us in terms of funding Section 319 grants.

Mr. ADLER. Congressman, to put the question and answer in perspective, we need to remember that this administration opposed the nonpoint source control provision of the 1987 Water Quality Act. They lost that issue when Congress overrode President Reagan's veto of the act, but now, by not asking for full funding for the program, they're helping to make sure that it will not be fully and properly implemented.

Mr. THOMPSON. I think we could also point out that the $100 million authorized per year is not only not insignificant, if you split it up as to $2 million for each State, just for purposes of illustration, you would find that that $2 million per State is more than most States have spent on their own, nonpoint source programs even some States that have what are considered to be fairly progressive programs or fairly well-funded programs.

Virginia, for instance, has only put $1.4 million per year (this past fiscal year) into its entire Chesapeake Bay nonpoint source effort, and one year of Federal funding would far surpass their own input into the program.

Mr. CLEMENT. My last question is for Mr. Goffman. I haven't had a chance to read your recent report on the role of acid rain in polluted coastal waters. Would the current reductions called for in any of the numerous acid rain bills, such as H.R. 2666, be adequate to address the problem or would the bills need to be altered to affect the coastal acid rain problem?

Mr. GOFFMAN. Frankly, I think H.R. 2666 calls for approximately a 4-million-ton reduction nationwide in oxide of nitrogen, which is the key precursor here. Probably, to really do the job, that total tonnage would have to be increased to around 8 million tons.

Another point to bear in mind, however, is that automobiles are a significant source of oxides of nitrogen. With a projected increase in the miles that vehicles are going to be traveling over the next decade, we'd also need to tighten down on tail pipe standards. In addition to H.R. 2666, we also need to see the provisions of the companion bill, H.R. 3054, which includes tail pipe reductions enacted as well.

Mr. CLEMENT. Thank you, Mr. Chairman.

Mr. STUDDS. Thank you.

Mr. Whittington, you look like far too nice a man to be asked to defend the administration's record, so we won't impose that burden on you at this point. I think the point made by Mr. Adler is clear. I had forgotten for the moment that the very statute that we're discussing in large part was passed over the President's veto.

According to Mr. Adler, we're losing the battle. That was a phrase you used early on. Is there anyone here who takes issue with that general observation that we are losing the battle we have been discussing for the past couple of hours?

Mr. WHITTINGTON. I'll have to take exception to that.

Mr. STUDDS. Watch out or we won't be so nice. Go ahead. [Laughter.]

Mr. WHITTINGTON. I think we've made a major move forward with the 1987 amendments, and particularly in regard to——

Mr. STUDDS. That's heresay; you're not supposed to say that.

Mr. Whittington [continuing]. Particularly in regard to now getting on with the listing and assessment of waters to determine where the nonpoint problem is.

I think that aspect of the 1987 amendments is going to be a telling factor, and I don't think we've seen the benefits yet. We've not even completed the management studies by the States. Once we do that, I think we'll start to see the benefits of what's going on.

We've just started. I think we've reached the end of the beginning and we're now ready to go on.

Mr. Studds. Well, that may not be inconsistent with what I think Mr. Adler meant, if I may take the liberty of interpreting. We can be in the process of mobilizing the troops and be losing the battle at the same time since we don't have any on the front.

It seems to me that what he meant was that, in terms of the problem of the pollution itself, that we are not improving at the moment; it's getting worse, not better. Is that a fair statement?

Mr. Whittington. Sir, I'd have to take exception to that.

Mr. Studds. Oh, yes?

Mr. Whittington. If that's his statement. I would——

Mr. Studds. In a moment we'll let him say what he meant, but I'm assuming that's what he meant.

Mr. Whittington. In my view, the reason we're seeing nonpoint source identified as such a large share of our problem in these estuaries—you saw the chart, 45 percent—is because we've managed over the past 15 years to deal with the industrial and municipal point sources. So, as point source pollutant discharges have gone down, of course the share due to nonpoint sources, which hasn't been addressed too well, has gone up. I think we are making progress on cleaning up water; now we've identified a villain and we need to deal with it.

Mr. Studds. Go ahead, Mr. Adler.

Mr. Adler. You translated quite well, but let me elaborate—first of all, to suggest that the battle to control nonpoint source pollution began in 1987 is simply inaccurate. Congress mandated equal control over nonpoint source and point source control in 1972. They just chose, you just chose different methods.

But as to how bad the problem is in the marine environment, let me quote from the Office of Technology Assessment report:

> Nonpoint runoff dominates as a source of suspended solids and also contributes half or more of total phosphorous, chromium, copper, lead, iron, and zinc. It is also the overwhelming contributor of fecal coliform bacteria in all areas of the country.

I think the record is pretty clear that, while we've made more progress on point source pollution, we have not made the necessary progress on nonpoint source pollution.

Mr. Studds. I didn't realize I was going to precipitate a battle here. This is the fifth of this series of seven hearings, I guess, and certainly if there has been a common theme, almost universely enunciated, it has been that we have a very bad situation on our hands generally with respect to coastal pollution and it's getting worse. Is that an arguable proposition?

Mr. Nichols. At least from Oregon's standpoint, I think if we don't do anything, it's going to get worse. I'm relatively new at my job, so maybe I'm naive, but I think some of the things that we're doing, part as a result of the new Clean Water Act, is going to make some improvements in water quality in Oregon.

Mr. STUDDS. "Is going to"?

Mr. NICHOLS. Yes.

Mr. STUDDS. That's optimistic. I'm delighted, but——

Mr. NICHOLS. But the nature of nonpoint source pollution, and maybe one of the definitions you can throw in the hat, is personal—it's a personal problem because it's a people problem.

As development continues to occur on the coasts and elsewhere throughout the country, you are going to generate more nonpoint source, people-type pollution.

Mr. STUDDS. Personal pollution has the same initials as Mr. Adler's suggestion. [Laughter.]

Mr. NICHOLS. Human maybe.

Mr. STUDDS. Yes.

Mr. THOMPSON. I think that's a good point, though, to bring up the fact that we're not talking about a static problem. We don't have a certain amount of pollutants entering our waterways and now we just have to wait for our management programs to come along and then we can see a reduction in those pollutants. It's really a race to see if the pollution increases faster than our management programs decrease that pollution.

A lot of the coastal managers I talk with acknowledge the fact that their State is developing a nonpoint source program and they're glad about that. They simply say that the program itself is not proportionately effective enough to deal with the fact that their coastal zones are increasing in growth and density at a rate that is more significant than what the State is proposing to do in its nonpoint source program, and I think that that's why it's difficult to say that water quality is improving or will improve with our programs. It all depends on what's in our programs. There are good programs and there are bad programs, and I think that EPA really has a role to play in making that distinction when they approve these State programs; and to go beyond the very limited criteria provided in the Clean Water Act as to what a State program has to have in it.

Mr. STUDDS. I don't think even EPA meant to make the argument that we're in a wonderful, wonderful world that's getting better every moment as we speak in this regard; did you?

Mr. WHITTINGTON. I did not.

Mr. STUDDS. No? Certainly, by any lay measure of things, in our part of the country there are more shellfish beds closed each year, not less. We're not going in the right direction yet in those most obvious of criteria that one could look at.

As I said and as I think you all know, this is the fifth of a series of six or seven of these hearings in this Congress. It was our intention from the beginning—we realized that this was an enormously complex problem, one of the complexities being the fact that it has its own language. Our hope was that we could end this Congress not with anything new in law in this regard, but with a fairly comprehensive record having been built on the basis of which in the next Congress with, heaven help us all, the next Administration, perhaps we could get a head start on trying to take a fresh look at some things that we've pretty badly let go for the most part in the last eight years.

Mr. Whittington, your agency still exists, which in the language of the preceding eight years, has to be cast as a triumph. You're still here, you personally and institutionally. That was not at all certain five or six years ago, at least to some of us. That period is receding and a new era of one sort or another is coming.

It's our fervent hope that these hearings, as I say, will get a jump on things. We'll be in a position to move much more rapidly in whatever new setting we find ourselves next January in this city.

With that in mind, there is a question I've often asked. This is not mandatory, but just for the fun of it: bearing in mind that that's our focus and that's the perspective that we're bringing here, and we're trying to prepare ourselves to move in a comprehensive fashion with some uncharacteristic dispatch with the new Administration and the new Congress, and a new year, if you wanted to leave this particular hearing calling our attention to one overridingly important thing in your judgment that we ought to be either particularly bearing in mind or that you'd like to have us see in a set of recommendations which we might be making to the next Congress and the next Administration—what would you like to leave us with, each of you, with this in mind?

What's the single most important thing you'd like to see us either flag for attention or action or bear in mind as we proceed? As I say, it's a totally voluntary question.

Mr. NICHOLS. I'll make the first statement. It came up in my testimony, I think, and this is that I think in a lot of cases nonpoint source programs delved around the idea of implementing best management practices, but best management practices have to relate to the water quality in the stream. Until you make that circuit and make sure that the best management practices of whatever activities you have related to the nonpoint source are designed to be implemented to meet water quality—and if we don't do that, we can forget about trying to control nonpoint source.

Mr. STUDDS. Anyone else?

Mr. WHITTINGTON. I'll take my life in my hands here.

It seems to me that this Committee has perceived the problem, and can keep the heat turned up. The nonpoint source porogram is a cooperative effort in that EPA has specific charges under the Act but we work with the States and we work with the local governments, as the State itself works with the local governments.

There's a tremendous opportunity there for things not to happen. We don't like to contemplate that, but that opportunity exists. I think the heat ought to be kept on and light ought to be shone on that situation.

Mr. STUDDS. You may have come up with a genuinely memorable observation, "an opportunity for things not to happen."

That may be at least a heading on one page, I think, here. I understand what you're saying all too well.

Mr. Adler?

Mr. ADLER. I think Congress needs to think in terms of three strikes and you're out. In 1972 and 1977 and 1987, Congress elected a hands-off approach to nonpoint source management in the sense that they balanced the need for political flexibility, letting the States control their own land use management and said, "Control nonpoint source pollution, but do it in your own way."

This has to be the last chance, and I think the States have to get that message. States have to know that if they don't do a good job this time, the Federal Government has to step in and take a lot more formal or mandatory approach, perhaps to the extent of EPA-promulgated and implemented nonpoint source programs in States that do not do an adequate job.

Mr. Studds. Okay. Anyone else?

Mr. Thompson. I would just like to add that I think that Congress should be aware of the fact that there are good programs and there are bad programs now. People understand the differences, and I don't think that EPA guidance or EPA review of State programs reflects this fact.

We're no longer in the age where there is such a mysterious relationship between land use and water quality that we have to throw up our hands and say, well, pretty much, whatever one State does is just as good as what another State does. I think that by identifying the localities and the States that really are on the cutting edge of nonpoint source control, we can hold them up as models for other States and for Federal criteria by which to judge other State programs.

Mr. Studds. Is it appropriate to ask you—would you flag two or three of those that you would put at the very top?

Mr. Thompson. Yes. I would flag Florida's local land use aspects. I would flag Wisconsin's watershed basin planning aspects. I would flag Nebraska's regulatory nitrate regulations. I would flag California's dairy cattle regulations for manure spreading and for runoff collection.

Mr. Studds. Yes?

Mr. Goffman. Let me answer by turning the meaning of an old cliche on its head and remind everybody that in many ways the sky is the limit. By that, I mean that all the efforts that were just discussed are going to run into a certain limit in terms of how much progress can be made, if the atmospheric contribution to pollution, to water pollution, is not taken account of.

What we're talking about is unwanted nutrients in coastal waters; we're talking about toxic pollutants in the Great Lakes or other bodies of water. The atmosphere appears to be a very important medium through which pollutants and toxins get into bodies of water. That's something that both this committee and the committees that have Clean Air Act jurisdiction will have to recognize before the efforts of this committee will be fully successful.

Mr. Studds. Thank you.

I want to thank you all. Obviously, this is a field where you're all experts one way or another, which is frustrating in large measure because of it's complexity. The politics of it just add another layer of frustration. For those of you who have alluded to that in one way or another, perhaps they will change.

We thank you very, very much for your patience and for your contribution. We look forward to working with you as we try to proceed further.

The Subcommittees stand adjourned.

[Whereupon, at 4:17 p.m., the subcommittees recessed, to reconvene at the call of the Chair.]

[The following was submitted for the record:]

Statement of Peter C. Myer-
Deputy Secretary
United States Department of Agriculture
Before the
Fisheries and Wildlife Conservation and the Environment Subcommittee, and
the Oceanography Subcommittee of the Merchant Marine and Fisheries Committee,
U.S. House of Representatives
July 13, 1988.

Mr. Chairman and members of the committee I am Peter C. Myers, Deputy Secretary of the Department of Agriculture. I am pleased to have the opportunity to appear here today to discuss the Department of Agriculture's programs relating to nonpoint source pollution and coastal and estuarine water quality.

The general framework for addressing water quality within USDA is provided under the Resource Conservation Act of 1977, the Resource Protection Act of 1977, and the Food Security Act of 1985. Under these Acts the Department of Agriculture is committed to manage, conserve and protect our national soil, water, and forest resources. This commitment is accomplished through technical and financial assistance to private landowners and through multiple use management of our national forests. Due to the close proximity of agricultural lands to coastal and estuarine waters, USDA programs have a significant involvement in the protection of these waters. In accordance with the Department's nonpoint source water quality policy and the proposed National Conservation Program, water quality is one of the highest conservation priorities of USDA, ranking only behind erosion control. USDA's primary strategy for dealing with nonpoint sources of water pollution is to encourage the voluntary development and application of Best Management Practices (BMPs) which restore and maintain productive uses of soil and water resources. There are many programs, administered by various USDA agencies, that address coastal and estuarine water. I will limit my remarks today, primarily to the activities and programs of two agencies - the Soil Conservation Service and the Forest Service.

Soil Conservation Service (SCS)

The Soil Conservation Service provides financial and technical assistance to the private agriculture sector for the conservation of soil and water resources. Program assistance is available to landowners and users on a voluntary basis. Use of these programs depends upon the availability of both funds and technical resources as well as the interest of the private sector in protecting the environment and the agricultural resource base. The principal objective of this assistance is to reduce soil erosion and the consequent adverse effects of sedimentation and depletion of the soil resource base.

The Soil Conservation Service is a highly dispersed agency with over 2,000 field offices located in almost every county in the Nation. The technical staffs at these offices work cooperatively with local soil conservation districts, other state agencies and individual farm operators to achieve soil and water conservation objectives. Most agricultural cost-share or incentive programs whether, federally or state funded, are delivered by the SCS field personnel and rely upon the agency's technical standards and specifications for implementation and quality assurance.

The Soil Conservation Service has a broad range of technical programs that relate to the protection of soil and water resources. I would like to describe a few of them to you which I believe address the concerns of nonpoint source pollution and estuarine and coastal water quality.

The Watershed Protection and Flood Prevention Act, Public Law 83-566 authorizes the Secretary of Agriculture to give technical and financial aid to local organizations for planning and installing watershed protection and flood prevention projects. Objectives of the program include flood prevention, erosion reduction, agricultural water management, fish and wildlife development, water quality improvement and other related agricultural and rural municipal water needs. Over 600 watershed projects ranging up to 250,000 acres in size have been installed, including the conservation treatment of 20 million acres of nonfederal lands. Many of these projects have been installed in estuarine or coastal watersheds.

The Conservation Compliance Provisions of the Food Security Act of 1985 encourages the conservation of highly erodible cropland and the protection of existing wetlands. More than one in four acres of the nation's existing cropland is highly erodible. These provisions are administered by ASCS with technical assistance from SCS. These 100 million acres of land contribute significantly to erosion related problems of sediment deposition and poor water quality. Implementation of the Conservation Compliance provisions of the 1985 Act will significantly reduce erosion from these lands. Conservation Compliance requires that all farmers and ranchers with highly erodible lands have a conservation plan implemented by 1995 in order to remain eligible for certain USDA program benefits. These provisions will help prevent erosion and protect existing wetlands. Many of these acres are adjacent to the nation's estuaries and coastal waterways; thus, treatment would directly affect these waters.

The Conservation Reserve Program Authorized by the Food Security Act of 1985 has the potential to remove from cultivation 40-45 million acres of highly erodible farm land. The Conservation Reserve Program is a voluntary program administered by ASCS, with technical support from SCS, to help farmers reduce critical soil erosion on highly erodible croplands. Only cropland fields with identified highly erodible soils or existing erosion problems are eligible for this program. Under this program rental payments are made to encourage farmers to stop growing crops on these lands and to plant them to grass or trees under 10-year contracts with USDA. Over 25.5 million acres of highly erodible lands have been placed in the Conservation Reserve Program as of February 1988. We estimate that erosion will be reduced in these areas by more than 500 million tons annually, which would be approximately 17 percent of the nation's erosion from agricultural lands.

Cooperative River Basin Studies are carried out by SCS to assist states in developing plans to control nonpoint source pollution, conserve water, and preserve wetlands. The areas covered by river basin studies range in size from sub-basins entirely within one county to major basin efforts that may cross several state and/or international boundaries. USDA agencies provide technical assistance throughout the planning process. SCS has the responsibility for leadership and coordination within USDA. Projects have been implemented to study, among other topics, the effects of forestry practices on water quality of the Great Lakes, the effects of agriculture and forestry on the water quality of Puget Sound, and drainage and flood control in areas of New York that have a high potential for farming. The river basin studies provide technical data bases for use in implementing other USDA programs such as small watershed projects, coastal zone management plans and state water plans, and in preparing and reviewing environmental analyses.

Estuaries of National Significance have recently been identified by the Congress and the Environmental Protection Agency where water quality, fish and wildlife habitat, sedimentation, and estuary use and development are major concerns. Examples of such estuaries are Long Island Sound, Buzzards Bay, New York-New Jersey Harbor, Delaware Bay, Albemarle-Pamlico Sound, Chesapeake Bay, Narraganset Bay, Puget Sound, San Francisco Bay and the U.S. Gulf Coast. The Department of Agriculture has a major interest in the evaluation of estuarine water quality concerns because of farm and forest operations adjacent or tributary to the estuaries. The Department, through SCS and FS technical programs, is directly assisting the various estuary planning organizations in data acquisition and analysis and in treatment of such nonpoint source water pollution problems. Monitoring and evaluation of nonpoint source water pollution activities are also carried out. In the case of the Chesapeake Bay, SCS has committed an additional 31 employees to work on evaluation and restoration efforts. Four employees have been committed to work with EPA on the Puget Sound. In addition, ongoing programs such as Watershed Protection Program, Conservation Reserve, and Conservation Operations are being incorporated into the long range plans for estuary protection.

State agricultural experiment stations in Maryland, Delaware and Virginia and Delaware State University, in cooperation with the U.S. Department of Agriculture, are conducting research into agricultural practices that may impact the Chesapeake Bay environment. This research compares various agricultural management practices with respect to their efficiency in improving Chesapeake Bay water quality. Areas of immediate interest are: the management of soil nitrogen and herbicides, the impact of agricultural drainage, and best management practices for riparian vegetation to reduce nitrates in ground water. Virginia is refining a hydraulic model for soil and water management that can provide answers to specific questions about the response to disruptions in a field or a watershed. They are also studying the comparative costs of applying various soil and water conservation practices.

In addition to providing technical assistance and direct project involvement, the Soil Conservation Service has developed numerous data bases that are major sources of nonpoint source pollution treatment information. These include the National Soil Survey Program and the National Resource Inventory. These data bases serve not only SCS efforts but those of all interested land management groups. USDA Plant Materials Centers also directly support the efforts to manage estuarine and coastal problems through development and testing of dune stabilizing vegetation.

Forest Service (FS)

The Forest Service Cooperative Forestry program provides assistance in the restoration of lands that have been misused in the past. The Forest Service research program continues to provide information that is heavily used in development of land management practices designed to reduce the impacts of forest management activities on water quality.

In addition to State assistance and forestry research, the Forest Service is responsible for the management of 191 million acres of land in the National Forest System. The Forest Service is responsible for ensuring a continuous supply of timber and for maintaining favorable conditions of water flow on these lands, while at the same time providing for multiple resource benefits. To ensure protection of the water resource, the Forest Service is implementing a nonpoint source management strategy that was developed by the Department in cooperation with EPA. This strategy follows the concepts contained in the 1988 amendments to the Clean Water Act. The primary focus is on development of BMPs designed to control, to the maximum extent practicable, pollution from nonpoint sources. The strategy calls for development of Best Management Practices that will provide for protection of identified beneficial uses of water, monitoring to ensure implementation of specified practices, monitoring to determine effectiveness of practice design, and the adjustment of recommended practices and/or water quality standards. In this management strategy, BMPs are used as the performance standard and water quality standards are used as an attainment standard to evaluate success or failure of the recommended practices. This management strategy provides a performance standard that can be readily understood by land owners and operators, and it provides certainty with regard to what is expected. As a result, it helps ensure maintenance of water quality sufficient to support identified beneficial uses. It does, however, place a heavy burden on the professional resource manager to translate complex relationships into easily understood land management prescriptions.

In addition to development of programs designed to prevent creation of new problems from proposed activities, the Forest Service is also involved in a watershed improvement program designed to correct problems resulting from past activities on National Forest lands. For example, in the Southeast large gullies that have developed as a result of poor farming practices in the past are being re-shaped and re-vegetated. The Forest Service is taking action to abate tedious threats to water quality from certain areas on the National Forests, such as abandoned mines and solid waste disposal sites, through a Federal Facilities Compliance Program.

In summary Mr. Chairman, I would like to say that in the area of water quality, the principal objectives of the Department of Agriculture are:

- -- To reduce soil erosion through implementation of the conservation provisions of the Food Security Act of 1985.
- -- To continue developing and implementing best management practices for the control of nonpoint pollution sources from agricultural and silvicultural activities
- -- To address the impacts of agriculture on surface and ground water resources through sediment reduction and the effective management of agricultural chemicals, nutrients and animal waste products.

We believe that the technical capabilities available through our natural resource agencies, the Soil Conservation Service and the Forest Service, coupled with the educational programs of Cooperative Extension Service, and the financial assistance programs of ASCS will enable us to meet these objectives. Because of the geographic relationship of agricultural lands to the rivers, estuaries and coastal waters of the country, the attainment of these objectives will have significant positive impact upon the quality of these waters. The Department of Agriculture is committed to effective soil, water and forest management, and to the resulting positive effects that this management has on the nation's waters. We welcome the opportunity to continue our cooperative efforts with other federal and state agencies and private land owners.

I thank you for the opportunity to explain our efforts to you today and I would be pleased to address any questions you may have. Thank you.

STATEMENT OF
WILLIAM A. WHITTINGTON
ACTING DEPUTY ASSISTANT ADMINISTRATOR, OFFICE OF WATER
U.S. ENVIRONMENTAL PROTECTION AGENCY
BEFORE THE
SUBCOMMITTEE ON OCEANOGRAPHY
AND THE
SUBCOMMITTEE ON FISHERIES AND WILDLIFE CONSERVATION
OF THE
COMMITTEE ON MERCHANT MARINE AND FISHERIES
HOUSE OF REPRESENTATIVES

July 13, 1988

Good morning. I am William Whittington, Acting Deputy Assistant Administrator for the Office of Water (OW) at the U.S. Environmental Protection Agency (EPA). Accompanying me today is Carl Myers Chief of our Nonpoint Source program office. The Office of Water has responsibility for administering all of EPA's water programs, including the nonpoint source (NPS) program. I am pleased to appear before you today to testify on the nature of NPS water quality problems and EPA's efforts to address such problems in the coastal areas of our nation.

Nonpoint sources of water pollution are both diffuse in nature and difficult to define. In general, NPS pollutants are carried over and through the ground by rainfall and snowmelt, but a variety of legal distinctions complicates the issue. When runoff is collected and discharged through a pipe (e.g., in combined storm and sanitary sewers, or in cases of runoff from active mines), it is usually considered to be a point source and therefore subject to regulation under the National Pollutant

Discharge Elimination System (NPDES) established by section 402 of the Clean Water Act (CWA). There are exceptions, however, such as the CWA's exclusion of irrigation return flow from the definition of point source as a nonpoint source, even though the water is collected and returned to the stream through a discrete channel or pipe. The activities that are generally recognized as the major causes of NPS pollution, however, are: agriculture, mining, silviculture, construction, urban runoff and airborne pollutants.

The physical, chemical and hydrological make-up of many near-coastal water bodies results in their becoming sinks or traps for pollutants of all types, including pollutants from nonpoint source activities. Near coastal waters receive and accumulate nonpoint-source pollutants not only from activities on their immediate shores but also from extensive upstream drainage systems. Growing coastal populations are placing further stress on these sensitive environments; recent studies estimate that by 1990 we can expect approximately 75% of our nation's population to live within 50 miles of the coast.

Let me illustrate the complex chain of events which can lead to impairment of coastal waters by briefly recalling recent efforts to pin down the causes of deteriorating water quality in Chesapeake Bay. I should say at the outset that I am not an expert on the Bay, but I have observed it closely over the years. Generalized concern about Bay water quality led, by 1976, to numerous uncoordinated studies of the Bay. However, limitations of the studies prevented conclusions on two important issues - namely, why we were observing a trend of disappearing Bay grasses and why the fish landings and oyster harvests were declining. Arguments centered on whether the losses of fish, oysters and Bay grasses were cyclic or permanent occurrences, and whether they were due to natural or human causes. As a result, Congress directed EPA to conduct a 5-year study of the Bay's water quality and resources, and to develop management strategies to preserve the Bay's quality.

In very simplest terms, the problems were traced to excess levels of nutrients and toxic pollutants in the Bay system. There are other factors - over-fishing, climatic trends, and physical alterations of the Bay associated with dredging and filling. In that sense, there is no 'single bullet'. However, nutrient loadings have substantially increased, particularly in the upper and middle portions of the Bay, and high concentrations of toxics have been found both in the water column and in the sediments in areas of high population and industrial activity such as the Patapsco, Elizabeth and James Rivers and Baltimore Harbor.

High nutrient levels impair the Bay's ecosystem in a variety of ways. They stimulate the excessive growth of phytoplankton, which in turn can cause the die-off of seagrasses, the spawning and nursery grounds for a variety of fish and shellfish. The grasses die because colonies of phytoplankton, or algae, in the water rob them of adequate sunlight and the phytoplankton coat the leaves of the grasses, preventing adequate photosynthesis. In addition, the die-off and subsequent decay of algae in deeper waters lowers the oxygen below levels tolerable to the fish and shellfish that live there.

The EPA study included an extensive modelling effort which concluded in 1983 that in an average year, 67% of the nitrogen and 39% of the phosphorus were contributed by nonpoint sources. Point sources were found to contribute the difference - 33% of the nitrogen and 61% of the phosphorus. Recently, this breakdown of sources has been widely discussed as a result of the conclusion of an Environmental Defense Fund (EDF) study that 25% of the nitrogen input to the Bay is due to atmospheric deposition. While EPA has testified that the percentage is likely to be overstated, experts agree that atmospheric deposition is a significant source and must be factored into our understanding of estuarine systems.

Looking behind the source breakdown to the cultural changes which are responsible, the picture is also complicated. While farming has gone on around the Bay for 350 years, significant changes have occurred in the last 40 years in the way farming is carried out, altering its impacts on the Bay. In the 8 major basins, cropland has decreased by an average of 24%. The resulting intensification of agricultural activity, that is growing more on less land, in the Bay, has led to a major increase in the use of fertilizers and other chemicals. In addition, the consolidation of agricultural land into fewer and larger farms owned by absentee landlords or corporations and operated by tenants may reduce the incentive to control soil and chemical loss. The conversion of the land to residential, urban, and suburban areas has increased 182% since 1950 and has further affected nutrient loadings through increased residential discharges. The volume of sewage treatment plants discharges has increased despite major upgrades in treatment capability. Erosion associated with construction activities and increased use of lawn fertilizers has also contributed to the problem. You can see that at all stages of the process - on the land as in the water the dynamics of the process are complicated.

This same pattern of impacts is occurring in coastal waters around the country. In the 1986 National Water Quality Inventory, a biennial report on overall water quality which EPA compiles on the basis of reports by individual States, we noted that the States had reported nonpoint sources to be the largest remaining source of pollution in estuaries: 45% in comparison with 22% for municipal sources and 8% for industrial sources.

You have heard earlier in these hearings from Tudor Davies, Director of the EPA's Office of Marine and Estuarine Protection, about the National Estuary Program (NEP) and the broader Near Coastal Water Initiative begun by the Agency in 1985 to improve management of all near coastal waters. In nearly all of the NEP Management Conferences already convened - Buzzards Bay, Narragansett Bay, Long Island Sound, Albemarle/Pamlico Sounds, San Francisco

Bay and Puget Sound - as well as the other estuaries now under consideration, NPS pollution, both agricultural and urban, has been identified as a major focus of attention. Under the Near Coastal Water Initiative, EPA is currently funding three pilot projects to demonstrate innovative approaches to the management of near coastal waters - Coquille Bay in Oregon, the Inland Bays of Delaware and Perdido Bay on the Alabama/Florida border. NPS pollution is one of several major concerns in all three projects.

Turning now to the NPS program itself, let me provide some brief historical perspective. Efforts to control NPS pollution are not new. The Federal Water Pollution Control Act of 1972 required States, in section 208, to prepare 'wall-to-wall' areawide water quality management plans. These plans were to identify and provide for the control of water pollution from all sources, including nonpoint sources as well as municipal and industrial sources.

During the twelve years from 1973 through 1984, little was spent on the implementation of NPS plans although toward the end of this period selected States used small amounts of their State program grant funds for continued development and limited implementation of NPS controls.

In the last years of section 208 water quality management planning (1979-1981), EPA modified its direction to focus on specific nonpoint sources and to improve State and local financial and institutional arrangements for addressing NPS problems. Grants amounting to $102.9 million were made to prepare NPS management strategies, finish up areawide NPS plans and initiate prototype projects.

At the national level, a major commitment was made to characterize pollution due to urban runoff and to evaluate various best management practices (BMPs) for controlling its impacts on water quality. This effort, known as the Nationwide Urban Runoff Program (NURP), was conducted over the course of 5 years at 28 sites around the country at a cost of approximately $30 million. The extensive data base, innovative analytic methodology and specific findings of this study are currently being used by the Agency in developing the stormwater permit program required by the Water Quality Act of 1987 and by the U.S. Department of Transportation in requirements for Federal highway construction.

Much of the NPS work now underway in coastal areas as well as in the nation as whole has its origins in those "208" plans, as they are often called. Along our coastline NPS problems in coastal waters have been identified in 208 plans: urban runoff in Boston Harbor, septic systems and agriculture in Buzzards Bay, agricultural chemicals and urban runoff on Long Island, agriculture and urban runoff in Chesapeake Bay, agriculture and silviculture in Albermarle/Pamlico Sounds, urban runoff in Tampa Bay, urban runoff and agriculture in San Francisco Bay, agriculture in Tillimook Bay and agriculture and urban runoff in the Great Lakes.

Despite such widespread and important planning efforts, however, implementation of NPS controls was scattered and uneven at best, and sometimes non-existent.

In 1984 EPA prepared and submitted to Congress a report on NPS pollution which pulled together available data and anecdotal information on the nature and scope of NPS problems and the scattered efforts then underway to address them. In 1985, EPA funded a national assessment of NPS problems and programs by the States under the leadership of the Association of State and Interstate Water Pollution Control Administrators. Believing that it was important to coordinate NPS control efforts among all levels of government and the private sector and to leverage the technical and financial resources of all affected parties, EPA convened a Federal/State/Local Nonpoint Source Task Force in 1985. The Task Force developed and recommended a national nonpoint source policy and stimulated the development of agency- and organization-specific NPS strategies by the Federal, State and local members.

The most significant recent development in the NPS program, however, was passage by the Congress of section 319 of the Water Quality Act amendments of 1987. Under this section, each State is required to develop and submit for EPA approval a NPS Assessment

Report and NPS Management Program by August 4, 1988. EPA then has 6 months to review and approve the State submissions and the States have limited additional time beyond that to revise and resubmit Reports or Programs which are not initially approved. Section 319 requires EPA to prepare and submit to Congress an Assessment Report for any State which does not do so. There is no analogous requirement for EPA to prepare State Management Programs.

The contents of both the Assessment Report and Management Program are spelled out in some detail in the Act itself. Briefly stated, the Assessment Report must identify the navigable waters within the State which will not attain or maintain water quality standards or the goals and objectives of the Act without additional action to control nonpoint sources, the categories of nonpoint sources responsible and State and local programs available to address the identified problems. The Management Program is a plan of what the State intends to do over the ensuing four years to begin addressing the problems identified in the Assessment, including BMPs, funding and programs which will be used and schedules for action containing annual milestones.

In implementing section 319, EPA has attempted to integrate its provisions with the many other new requirements of the WQA and ongoing core CWA programs through a State Clean Water Strategy approach. The WQA asked States to address important new responsibilities in surface water toxics, stormwater runoff, clean lakes and estuaries as well as in NPS assessment and control. EPA has encouraged the States to integrate these tasks with core CWA tasks and intensifying efforts to protect two other water resources, wetlands and ground water, in order to develop a more holistic approach to water quality problems. An important element of the process is establishing early, effective involvement of other Federal/State agencies, public interest groups, elected officials, professional organizations, the media and others who may be interested and able to assist in the process. Opening the process in this way can lead to new data, information and ideas, and can also generate a broad-based coalition of support for implementation activities.

I am pleased to report to you that the States are making substantial progress in meeting the requirements of section 319. We expect NPS Assessments and Management Programs from all States. Of the 29 coastal States, all except Alaska have submitted initial lists to our Regional Offices. Twenty-seven of the coastal States are expected to submit complete Assessments by the statutory deadline of August 4, 1988. Twenty-seven coastal States are also expected to submit NPS Management Programs by August 4th. We are anticipating that some of these Management Programs, particularly those prepared by States with limited resources and experience in NPS management, will require strengthening before they are approvable. However, it is clear that many States and localities have begun to address NPS water quality problems in a variety of ways, including the commitment of State and local funds, and will be building on those efforts as they complete and begin to implement their NPS Management Programs.

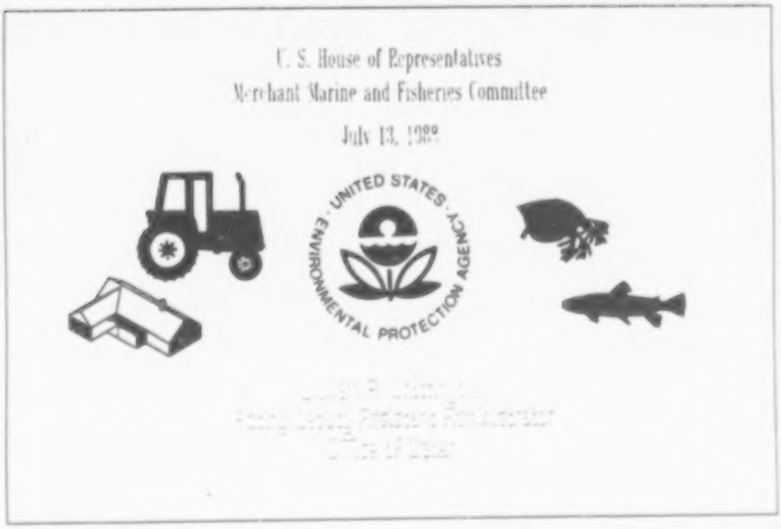
As we proceed to accelerate our efforts to control pollution from nonpoint sources, it becomes more and more apparent that there are many opportunities to leverage the resources and authorities of other Federal agencies to help accomplish NPS program objectives. The Fish and Wildlife Service at the Department of Interior can and has provided much valuable data and expertise on biological monitoring that will help us do a better job of identifying and protecting critical aquatic habitats. The Soil Conservation Service and Forest Service at the Department of Agriculture have long provided valuable technical assistance in the development and implementation of best management practices for agriculture and forestry.

But beyond the purely technical level, there are significant opportunities to link the objectives of EPA and other agencies. One of these opportunities is the Conservation Reserve Program (CRP) portion of the Food Security Act of 1985, under which highly erodible croplands may be retired from production. We believe the CRP has been effective in reducing soil erosion and have conducted analyses investigating the impact on water quality which suggest that there have in fact been improvements in surface water quality. We have been working with USDA to explore the potential for increasing its water quality benefits even more and were pleased at USDA's decision to include filter strips along waterways as eligible lands for the CRP.

It is particularly important that we maximize the environmental benefits of agricultural programs such as the CRP because agricultural production accounts for the largest volume of NPS loadings to surface waters.

Just as it is important to link together the authorities and programs of Federal agencies in addressing NPS pollution, it is also important to link together the various elements of EPA's water program in addressing this important water quality concern, such as our State Clean Water Quality Strategy initiative encouraging States to integrate NPS requirements into all relevant water quality and related environmental programs and to leverage other Federal, State and local resource management programs to support control and reduction of NPS pollution.

This concludes my prepared testimony, Mr. Chairman. I will be happy to answer any questions you may have.



U. S. House of Representatives
Merchant Marine and Fisheries Committee

July 13, 1988

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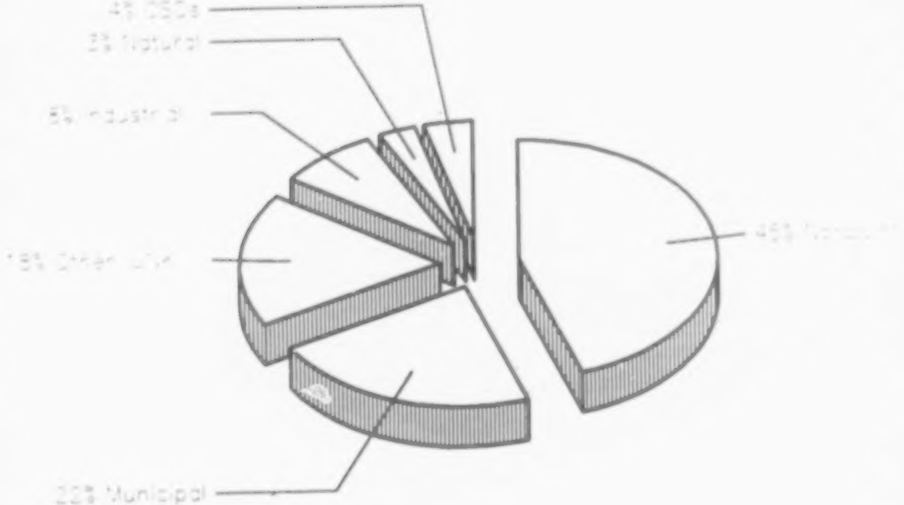
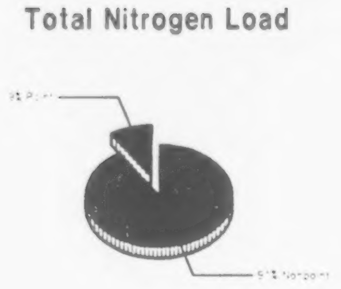
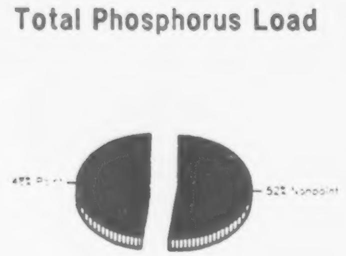
CAUSES OF POLLUTION IN U.S. ESTUARIES



SOURCE: 1986 305(b) Report

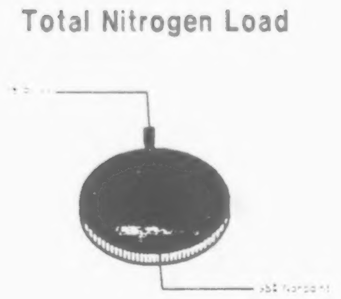
Bogue Sound, North Carolina

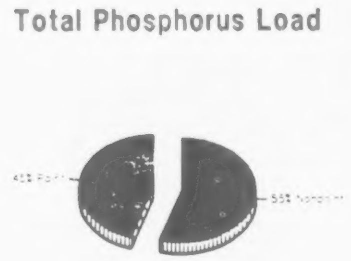




SOURCE: Strategic Assessment Branch, NOAA

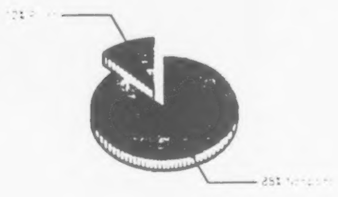
Willapa Bay, Washington



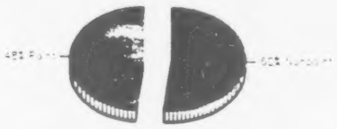


SOURCE: Strategic Assessment Branch, NOAA

Narraguagus Bay, Maine



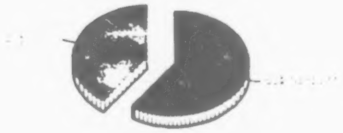
Total Nitrogen Load



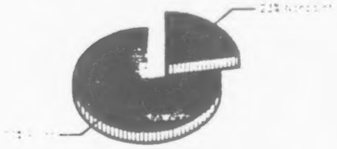
Total Phosphorus Load

SOURCE: Strategic Assessment Branch, NOAA

Indian River, Florida



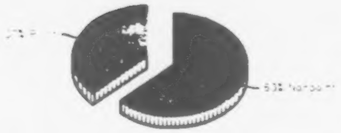
Total Nitrogen Load



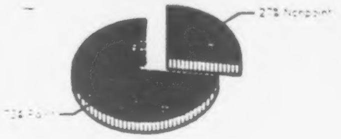
Total Phosphorus Load

SOURCE: Strategic Assessment Branch, NOAA

Chincoteague Bay, MD and VA



Total Nitrogen Load



Total Phosphorus Load

SOURCE: Strategic Assessment Branch, NOAA

ALL STATES

SUMMARY

NONPOINT SOURCE ASSESSMENTS -

- Forty-nine States and Territories have already submitted Parts A and B of the NPS Assessments to the EPA Regional Offices for review.

- Forty-nine States and Territories are expected to submit a complete NPS Assessment (Parts A - D) by the statutory deadline of August 4, 1988.

NPS MANAGEMENT PROGRAMS -

- Forty-seven States and Territories are expected to submit a Management Program by the statutory deadline of August 4, 1988, however, the majority of these documents will be submitted as draft on that date.

AWARD OF 205(j)(5) GRANTS -

- Forty-two States and Territories have been awarded FY87 205(j)(5) grants for the development of Nonpoint Source Assessments and Management Programs.

- Sixteen States have been awarded FY88 205(j)(5) grants for continued development of Assessments and Management Programs, and in some cases for implementation activities, once the States have approved Management programs.

SUBMISSION STATUS OF PARTS A & B OF NONPOINT SOURCE ASSESSMENT, COMPLETE NONPOINT SOURCE ASSESSMENT (NPSA), NONPOINT SOURCE MANAGEMENT PROGRAM (NPSMP), AND AWARD STATUS OF FY 87 AND FY 88 205(j)(5) GRANTS

REGION	STATE	PARTS A&B NPSA	COMPLETE NPSA	NPSMP	AWARD OF FY 87 205(j)(5)	AWARD OF FY 88 205(j)(5)
I	CT	4/29/88	8/4/88	8/4/88*	1/13/88 141,827	-0-
	ME	4/8/88	8/4/88	8/4/88*	1/12/88 100,000	-0-
	MA	3/25/88	8/4/88	8/4/88*	1/6/88 393,062	-0-
	NH	4/13/88	8/4/88	8/4/88*	12/21/87 115,696	-0-
	RI	4/8/88	7/1/88*	8/4/88*	10/15/87 100,000	6/2/88 81,000
	VT	4/1/88	8/4/88	8/4/88*	10/15/87 100,000	-0-
II	NJ	4/29/88	9/1/88*	9/1/88*	-0-	-0-
	NY	4/1/88	8/4/88*	8/4/88*	-0-	-0-
	PR	4/1/88	8/4/88	8/4/88*	-0-	-0-
	VI	4/1/88	8/4/88*	8/4/88*	-0-	-0-
III	DE	4/1/88	6/10/88	8/4/88*	3/30/88 100,000	-0-
	DC	4/4/88	4/4/88	8/4/88*	6/30/88 100,000	-0-
	MD	5/2/88	6/30/88	8/4/88*	6/30/88 100,000	-0-
	PA	4/21/88	6/10/88	9/15/88*	6/30/88 458,000	-0-

SUBMISSION STATUS OF PARTS A & B OF NONPOINT SOURCE ASSESSMENT, COMPLETE NONPOINT SOURCE ASSESSMENT (NPSA), NONPOINT SOURCE MANAGEMENT PROGRAM (NPSMP), AND AWARD STATUS OF FY 87 AND FY 88 205(j)(5) GRANTS

REGION	STATE	PARTS A&B NPSA	COMPLETE NPSA	NPSMP	AWARD OF FY 87 205(j)(5)	AWARD OF FY 88 205(j)(5)
	VA	4/4/88	4/4/88	8/4/88*	4/11/88 100,000	-0-
	WV	4/4/88	4/4/88	8/4/88*	9/30/87 180,292 6/13/88 110,172	-0-
IV	AL	4/1/88	8/4/88*	8/4/88*	9/30/87 129,450	5/15/88 256,820
	FL	4/4/88	8/4/88*	8/4/88*	1/20/88 100,000	-0-
	GA	3/30/88	8/4/88*	8/4/88*	-0-	-0-
	KY	3/7/88	8/4/88*	8/4/88*	9/16/87 147,350	6/15/88 292,320
	MS	4/1/88	8/4/88*	8/4/88*	9/30/87 104,310	-0-
	NC	4/1/88	8/4/88*	8/4/88*	7/30/87 208,440	6/15/88 414,520
	SC	4/1/88	8/4/88*	8/4/88*	9/30/87 118,600	-0-
	TN	3/1/88	8/4/88*	8/4/88*	9/30/87 168,180	-0-
V	IL	4/30/88	8/4/88	8/4/88*	2/17/88 523,600	-0-
	IN	5/20/88	8/4/88	8/4/88*	6/15/88 174,000	-0-
	MI	4/1/88	8/4/88	8/4/88*	4/26/88 497,000	4/26/88 528,000
	MN	4/8/88	4/11/88	8/4/88*	3/30/88 212,000	3/30/88 422,000
	OH	4/11/88	4/11/88	8/4/88*	9/28/87 556,572	2/16/88 94,678

SUBMISSION STATUS OF PARTS A & B OF NONPOINT SOURCE ASSESSMENT,
COMPLETE NONPOINT SOURCE ASSESSMENT (NPSA),
NONPOINT SOURCE MANAGEMENT PROGRAM (NPSMP), AND
AWARD STATUS OF FY 87 AND FY 88 205(j)(5) GRANTS

REGION	STATE	PARTS A&B NPSA	COMPLETE NPSA	NPSMP	AWARD OF FY 87 205(j)(5)	AWARD OF FY 88 205(j)(5)
	WI	4/1/88	4/1/88	8/4/88*	2/19/88 312,980	2/19/88 345,000
VI	AR	4/1/88	8/4/88	8/4/88	-0-	-0-
	LA	4/25/88	8/4/88	8/4/88*	12/31/87 ?	-0-
	NM	4/27/88	8/4/88	8/4/88*	3/14/88 25,000	-0-
	OK	5/24/88	8/4/88	8/4/88*	-0-	-0-
	TX	6/1/88	8/4/88	8/4/88*	11/18/87 523,634	-0-
VII	IA	4/1/88	7/7/88	8/4/88	4/15/88 156,690	-0-
	KS	3/23/88	8/4/88	8/4/88	-0-	-0-
	MO	4/4/88	7/1/88	8/4/88	1/13/88 329,040	-0-
	NB	4/5/88	6/15/88	8/4/88	12/17/87 100,000	-0-
VIII	CO	5/2/88	8/4/88	8/4/88*	5/?/87 100,000	6/15/88 183,720
	MT	4/28/88	8/4/88	8/4/88*	9/?/87 100,000	9/1/88 112,750
	ND	4/25/88	8/4/88	8/4/88*	6/?/87 100,000	9/1/88 112,750
	SD	4/11/88	8/4/88	8/4/88*	6/?/87 100,000	8/30/88 112,750
	UT	?	8/4/88	8/4/88*	5/?/87 100,000	5/?/88 121,020
	WY	7/4/88	8/4/88	8/4/88*	1/?/87 100,000	7/1/88 112,750

SUBMISSION STATUS OF PARTS A & B OF NONPOINT SOURCE ASSESSMENT, COMPLETE NONPOINT SOURCE ASSESSMENT (NPSA), NONPOINT SOURCE MANAGEMENT PROGRAM (NPSMP), AND AWARD STATUS OF FY 87 AND FY 88 205(j)(5) GRANTS

REGION	STATE	PARTS A&B NPSA	COMPLETE NPSA	NPSMP	AWARD OF FY 87 205(j)(5)	AWARD OF FY 88 205(j)(5)
IX	AZ	8/4/88	8/4/88*	8/4/88*	-0-	-0-
	CA	4/30/88	8/15/88*	8/15/88*	-0-	-0-
	HI	3/15/88	8/4/88*	8/4/88*	-0-	-0-
	NV	9/30/88	1/30/88*	?	5/9/88 100,000	? 112,750
	AS	NR	-	-	-0-	-0-
	MR	NR	-	-	-0-	-0-
	GU	NR	-	-	-0-	-0-
X	AK	6/30/88	10/31/88	10/31/88	1/?/88 100,000	-0-
	ID	5/19/88	7/1/88	10/1/88	12/?/87 100,000	-0-
	OR	6/7/88	6/30/88	8/4/88	1/?/87 130,780	1/?/88 199,169
	WA	6/6/88	6/30/88	8/4/88	2/?/88 201,330	-0-

* draft

** estimated

NR No Report

COASTAL STATES

SUMMARY

NONPOINT SOURCE ASSESSMENTS -

- Of the 29 Coastal States, all States, except Alaska have submitted Parts A and B of the NPS Assessments to the Regions.

- Twenty-seven of the 29 States are expected to submit a complete NPS Assessment (Parts a - d) by the statutory deadline of August 4, 1988.

NONPOINT SOURCE MANAGEMENT PROGRAMS -

- Twenty-seven of the 29 coastal States are expected to submit a NPS Management Program by the statutory deadline of August 4, 1988. The majority of these documents will be submitted as drafts to the Regions.

AWARD OF 205(j)(5) GRANTS

- Twenty-three States have received FY 87 205(j)(5) grants for development of the NPS Assessments and Management Programs.

- Eight States have been awarded FY 88 205(j)(5) grants for further development of the Assessments and Management Programs, and in some cases for implementation activities once the States have an approved Management Program.

STATUS OF THE NONPOINT SOURCE ASSESSMENTS, NONPOINT SOURCE MANAGEMENT PROGRAMS AND AWARD STATUS OF FY 87 AND FY 88 205(j)(5) GRANTS IN COASTAL STATES

R	State	Parts A & B of NPSA	Complete NPSA	NPSMP	Award of FY 87 205(j)(5)	Award of FY 88 205(j)(5)
I	CT	4/29	8/04	8/04*	01/13/88 $141,827	----
	ME	4/08	8/04	8/04*	01/12/88 $100,000	----
	MA	3/25	8/04	8/04*	01/06/88 $393,062	----
	NH	4/13	8/04	8/04*	12/21/87 $115,696	----
	RI	4/08	7/01*	8/04*	10/15/87 $100,000	06/02/88 $81,000
II	NJ	4/29	9/01	9/01*	----	----
	NY	4/01	8/04	8/04*	----	----
III	DE	4/01	6/10	8/04*	03/30/88 $100,000	----
	MD	5/02	6/30	8/04*	06/30/88 $100,000	----
	VA	4/04	4/04	8/04*	04/11/88 $100,000	----
IV	AL	4/01	8/04*	8/04*	09/30/87 $129,450	05/15/88 $256,820
	FL	4/04	8/04*	8/04*	01/20/88 $100,000	----
	GA	3/30	8/04*	8/04*	----	----
	NC	4/01	8/04*	8/04*	07/30/87 $208,440	06/15/88 $414,520
	SC	4/01	8/04*	8/04*	09/30/87 $118,600	----

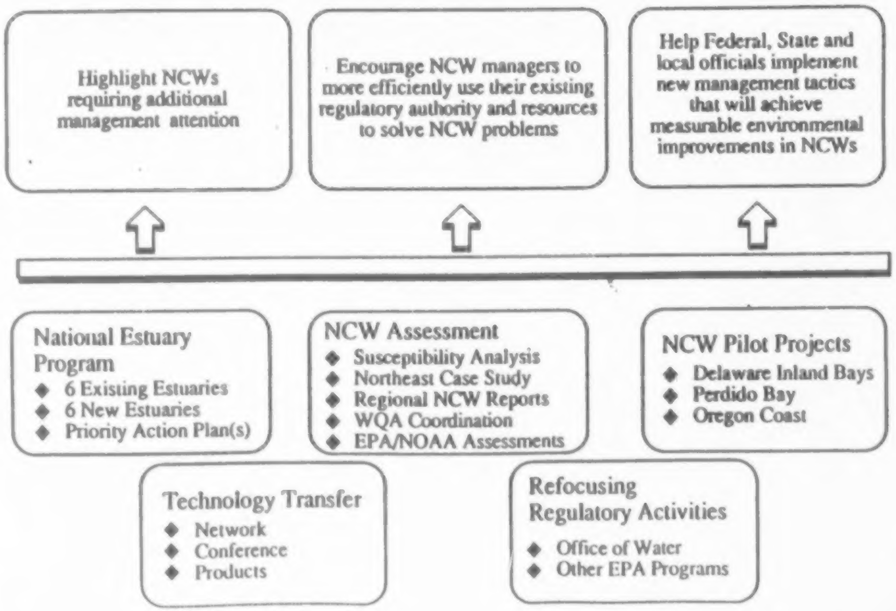
R	State	Parts A & B of NPSA	Complete NPSA	NPSMP	Award of FY 87 205(j)(5)	Award of FY 88 205(j)(5)
V	IL	4/30	8/04	8/04*	02/17/88 $523,600	----
	IN	5/20	8/04	8/04*	06/15/88	----
V	MI	4/01	8/04	8/04*	04/26/88 $497,000	04/26/88 $528,000
	MN	4/08	4/11	8/04*	03/30/88 $212,000	03/30/88 $422,000
	OH	4/11	4/11	8/04*	09/28/87 $556,572	02/16/88 $94,678
	WI	4/01	4/01	8/04*	02/19/88 $312,980	02/19/88 $345,000
VI	LA	4/25	8/04	8/04*	12/31/87	----
	TX	6/01	8/04	8/04*	11/18/87 $523,634	----
IX	AZ	8/04	8/04*	8/04*	----	----
	CA	4/30	8/15*	8/15*	----	----
	HI	3/15	8/04*	8/04*	----	----
X	AK	6/30	10/31	10/31	01/88 $100,000	----
	OR	6/07	06/30	8/04	01/88 $130,780	01/88 $199,169
	WA	6/06	6/30	8/04	02/88 $210,330	----

R = REGION
* = DRAFT
NPSA = NONPOINT SOURCE ASSESSMENT
NPSMP = NONPOINT SOURCE MANAGEMENT PROGRAM

EPA'S NCW STRATEGY: 1988 SUMMARY

Environmental Goal: **To Maintain and Where Possible Enhance Near Coastal Waters Environmental Quality**

EPA Goals:



Highlight NCWs requiring additional management attention

Encourage NCW managers to more efficiently use their existing regulatory authority and resources to solve NCW problems

Help Federal, State and local officials implement new management tactics that will achieve measurable environmental improvements in NCWs

Current Major Projects:

National Estuary Program
- 6 Existing Estuaries
- 6 New Estuaries
- Priority Action Plan(s)

NCW Assessment
- Susceptibility Analysis
- Northeast Case Study
- Regional NCW Reports
- WQA Coordination
- EPA/NOAA Assessments

NCW Pilot Projects
- Delaware Inland Bays
- Perdido Bay
- Oregon Coast

Technology Transfer
- Network
- Conference
- Products

Refocusing Regulatory Activities
- Office of Water
- Other EPA Programs

EPA'S OFFICE OF MARINE AND ESTUARINE PROTECTION

NEAR COASTAL WATER PILOT PROJECT PROGRAM

What is EPA's NCW Pilot Project Program?

EPA's Office of Water is funding three NCW pilot projects at a total of $950,000 beginning in March 1988 to demonstrate innovative management actions for addressing identified environmental quality problems in selected near coastal waters. The projects are joint Federal-State efforts, which will be completed in 1-2 years. Project results will be transferred for use in other near coastal waters around the country. This program is part of EPA's Near Coastal Waters Initiative to increase protection of near coastal waters - bays, estuaries, coastal wetlands, and the coastal ocean. The Near Coastal Waters Initiative is the next step in EPA's continually evolving coastal waterbody management program, beginning with the Great Lakes in 1972, the Chesapeake Bay in 1977, and the National Estuary Program in 1985.

What are the 3 projects?

EPA Region 3 -	Decisionmaking Information System for Delaware's Inland Bays
EPA Region 10 -	Oregon Coastal Resource Action Plan
EPA Region 4 -	Joint Florida/Alabama Identification of Nonpoint Source Strategies for Perdido Bay

How were the projects selected?

EPA carefully selected the three pilot projects on the basis of criteria consistent with the goals of EPA's NCW Initiative. These criteria were: innovation, action-orientation, applicability to other NCW's, likelihood of success, strong State and local commitment, strong public interest and project completion within 1-2 years. An EPA review team of Headquarters and coastal Regions scored and ranked the submitted proposals.

What are the objectives of each project?

Decisionmaking Information System for Delaware's Inland Bays

The objective is to develop an integrated information system - an Advance Information System (AIS) - to improve the decisionmaking process for proposed development plans in light of their potential impacts on the environment and natural resources of the Delaware Inland Bays. This new system will integrate and graphically display technical, ecological, and regulatory information in a series of computerized regional maps. Officials will be able to use these maps for permit decisions to predict the results of proposed actions at selected sites in the State, such as siting of new housing developments and waterfront construction, promoting appropriate land use, and avoiding or mitigating wetlands alterations. EPA expects that the AIS will provide an innovative model, applicable to other near coastal waters, for managing and resolving conflicts over resource uses. The lead State agency is Delaware's Department of Natural Resources and Environmental Control (DNREC).

Oregon Coastal Resource Action Plan

The objective is to more effectively address, control and protect Oregon's near coastal water environmental quality by demonstrating various point and nonpoint source control techniques in one estuary and developing a management action plan for all of Oregon's coastal waters. Several priority problems identified for the Coquille Estuary but common to other coastal waters will be addressed simultaneously, under the guidance of an interagency and citizens task force. As the second phase of the pilot, Oregon will develop a similar watershed action plan for the rest of Oregon's coast, based on the Coquille approach. The project will assist the State in implementing a new law, "The Ocean Resources Management Act", which establishes an interagency statewide task force to assess information and regulatory needs to prepare for future development in Oregon's coastal and offshore waters. EPA expects that this watershed management approach for restoring and protecting an estuary, with involvement of many State and local agencies and the public, will serve as a model for managing coastal watersheds in other areas of the country.

Joint Florida/Alabama Identification of Nonpoint Source Strategies for Perdido Bay

The objective is to address nonpoint problems in Perdido Bay through development and demonstration of a bi-State and local management action strategy. The project will accomplish three major tasks. The States will assess the impacts of pollution on the bay ecosystem by synthesizing the results of ongoing Federal and State studies, for ex. nutrient loadings. They will then develop a regional strategy for controlling nonpoint pollutants entering Perdido Bay from such sources as agricultural and animal feedlot activities and stormwater runoff. To oversee the development and implementation of the strategy, they will establish an interagency and citizens advisory task force. EPA expects the project to be a model for how two States, several local governments, users and citizens can join forces to combat nonpoint pollution problems in a shared near coastal waterbody. The lead agencies are Florida's Department of Environmental Regulation and Alabama's Department of Economic and Community Affairs.

Who can you contact for more information?

EPA Headquarters

Kathy Minsch
Office of Marine and Estuarine
Protection
USEPA
401 M Street, SW WH-556F
Washington, D.C. 20460
(202) 475-9552

EPA Region 10

John Gabrielson
USEPA Region 10
Office of Water Planning, WD-139
1200 Sixth Avenue
Seattle, WA 98101
(206) 442-1354

Region 3

Marria O'Malley
USEPA Region 3
Annapolis Lab
839 Bestgate Road
Annapolis, MD 21401
(301) 266-9180

EPA Region 4

Earl Bozeman
USEPA Region 4
Water Division
Marine Protection Section
345 Courtland Street
Atlanta, GA 30365
(404) 347-2126

NEIL GOLDSCHMIDT
GOVERNOR

Department of Environmental Quality

811 SW SIXTH AVENUE, PORTLAND, OREGON 97204-1390 PHONE (503) 229-5696

OREGON STATE DEPARTMENT OF ENVIRONMENTAL QUALITY

TESTIMONY BEFORE THE UNITED STATES HOUSE OF REPRESENTATIVES
FISHERIES & WILDLIFE CONSERVATION AND THE ENVIRONMENT SUBCOMMITTEE
AND SUBCOMMITTEE ON OCEANOGRAPHY
(MERCHANT MARINE AND FISHERIES COMMITTEE)

Wednesday, July 13, 1988

Mr. Chairman Studds, Members of the Committees:

My name is Dick Nichols, I am the Administrator of the Water Quality Division, Oregon Department of Environmental Quality. I am also the Chair of the Nonpoint Source Subcommittee of the Association of State and Interstate Water Pollution Control Administrators (ASIWPCA). My testimony today will describe some of our efforts in Oregon to address water pollution control problems caused by nonpoint source pollution.

Oregon is currently completing its assessment of nonpoint source water quality problems as required by Section 319 of the Water Quality Act of 1987. While the information is preliminary, the assessment will show that Oregon has waterbodies that are affected by nonpoint source water pollution. Oregon has approximately 90,000 miles of streams and rivers, 750,000 surface acres of lakes and reservoirs, 3,000 square miles of wetlands, 200 square miles of estuaries and 9,500 square miles of shallow groundwater aquifers of unknown volume. The Section 319 assessment effort reviewed the water quality status of approximately 27,000 stream miles, 500,000 acres of lake surface area, 180 square miles of estuary area and 100 square miles of the shallow groundwater area.

Of the 27,000 stream miles evaluated in the NPS assessment, we found that 19,000 miles are believed to have one or more nonpoint source caused water quality problems. About 6,000 stream miles were described as having a debilitating affect on the beneficial uses of those waters. The remaining 13,000 stream miles were reported to be threatening the beneficial uses. To a much lesser degree, our estuaries, lakes and groundwaters were also found to be affected by nonpoint source pollution.

The causes of NPS pollution come from a full range of land use activities in Oregon, i.e., agriculture, forestry, urban and construction site runoff were found to cause varying degrees of pollution. Private, state and federally managed lands were all found to produce varying amounts of nonpoint source pollutants.

An issue that is becoming more obvious when reviewing our nonpoint source assessment is the relative lack of quantitative water quality data. Following the federal lead, throughout that decade, Oregon's ambient water quality monitoring program has concentrated on major streams that are affected by point source discharges. Conversely, nonpoint source pollution tends to occur more in the rural areas where streams are relatively small. Because we do not have a significant amount of quantitative data on the smaller, rural streams, much of our assessment has relied on qualitative data (observations by professionals such as fishery biologists, land resource managers, etc.). Therefore, as we implement our nonpoint source program, we will need to continually verify the best professional judgement observation with quantitative data, and then determine specific corrective actions. Further, we are reconsidering our monitoring needs with the potential for expanding our ambient monitoring program. More than half of our state is owned by the Federal Government and, as a result, the role of federal agencies in ambient monitoring may have to be expanded.

As in other states, our programs are administered to protect the beneficial uses of our State's waterbodies. Beneficial uses of these waterbodies include drinking water, industrial process water, fishery habitat, boating, fishing, etc. Water quality standards have been adopted which protect these uses. For example, we have a standard for arsenic which is designed to assure that pollutants are not discharged into the water in quantities which would harm those who drink it.

Effective management tools are currently in place to deal with point sources that may discharge pollutants that would violate our water quality standards. Permits are required which specify discharge limits, monitoring and reporting, and other conditions.

Existing tools to control nonpoint source pollution are much different. Because there are no discrete points of discharge to limit or monitor, discharge permits are impractical. Instead, we rely on the use of Best Management Practices, or BMPs, which are methods or practices designed to prevent or minimize the release of pollutants into public waters.

In Oregon, the use of BMPs has been very effective, particularly in forestry where activities are regulated under the Oregon Forest Practices Act which was first implemented in 1972. This act requires silviculture activities, through use of administrative rules recognized as BMPs, to meet certain standards of which a portion are targeted to control nonpoint source pollution. The administrative rules have been revised and upgraded frequently since 1972 as new information has been developed on the effects of silvicultural practices. As a result of the Forest Practices Act, we believe, based on observations and data, sedimentation and other water quality problems caused by logging are considerably less than that caused before the Act went into effect.

However, even for those nonpoint source programs that appear to be effective, we still need specific monitoring information to verify compliance that BMPs are meeting water quality standards. Currently, as a part of our State's efforts under Section 319 of the Water Quality Act of 1987, we are developing a process to monitor the effectiveness of BMPs to protect water quality. The monitoring will then provide data that will allow us to upgrade BMPs if we find that water quality standards are being violated.

There are some other water quality issues that are emphasizing the importance of the control of nonpoint source pollution. First, Oregon is beginning to establish total maximum daily loads for its waterbodies that do not meet water quality standards. This process requires that pollutant loads be distributed among point and nonpoint sources in some fashion. As we allocate these loads, we are finding that the point sources will be forced to shoulder a greater burden of the cost for reducing the pollutant loads to meet standards unless we implement an effective nonpoint source program.

Second, the Food and Drug Administration, through the Interstate Shellfish Sanitation Conference, has established very stringent water quality criteria for shellfish growing areas. Without an effective nonpoint source program in place, Oregon may not be able to keep all of its commercial shellfish growing areas open for harvesting.

Third, as we begin to sample our State's groundwater, we are beginning to find locations where the groundwater is becoming contaminated from nonpoint source activities. In cases where the pollution is caused by inadequate sewage disposal practices, the State has taken action to install sewers and treatment plants. The most notable of these projects is one in the east Portland suburban area where sewers are being installed to provide service to 56,000 houses that currently discharge their sewage to the groundwater via cesspools. The total cost of the project will be about $360 million dollars. In other areas, the groundwater is being polluted with agricultural chemicals, most significantly, nitrate from fertilizers. The State is now developing legislation to help us deal with this type of nonpoint source pollution.

So, where is Oregon headed in its nonpoint source control program? First, we will continue to use resource agencies such as the Forest Service, Oregon Departments of Forestry and Agriculture, and others to conduct nonpoint source programs at the local level. Second, we will begin to tie water quality into the use and evaluation of BMPs. Third, because of limited resources, our activities will target particular stream segments on a priority basis yet to be determined.

In preparing this testimony, I have attempted to be brief and quickly touch on some of the more significant nonpoint source issues in Oregon. As a results, I have left out much of the details. I would be happy at this point to answer questions or expand as you wish.

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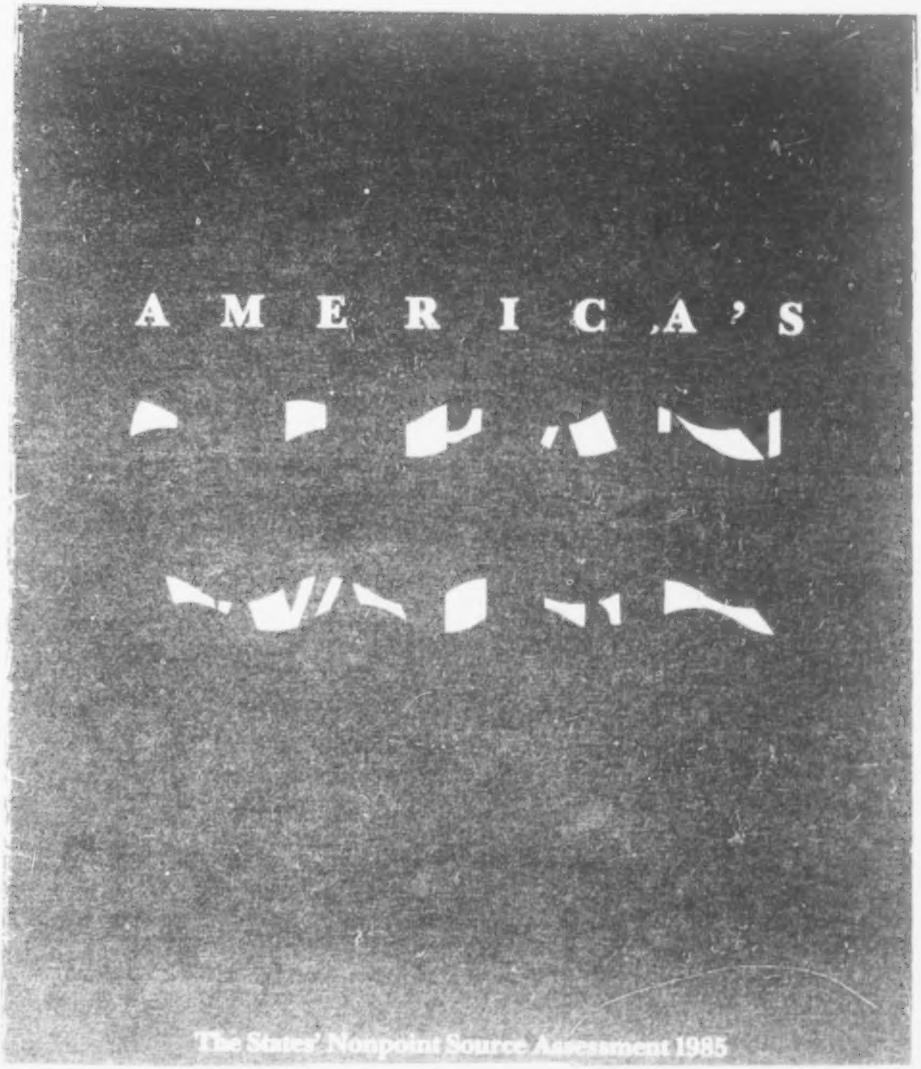

AMERICA'S

The States' Nonpoint Source Assessment 1985

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TO THE READER

This report demonstrates the cooperative efforts of State, Territorial, Interstate and Federal agencies in providing current information on the subject of Nonpoint Source Water Pollution. Prior to this extensive project, no comprehensive report on nonpoint source water quality issues has been available.

In early 1984, the Association of State and Interstate Water Pollution Control Administrators (ASIWPCA) finalized and published, with the cooperation of the US EPA, the report, **AMERICA'S CLEAN WATER, the States' Evaluation of Progress 1972-82.** Following the distribution of that report, which addressed the overall progress in improving the Nation's water quality, it was recognized by US EPA and ASIWPCA that a more detailed baseline status report was needed on the subject of nonpoint sources. **AMERICA'S CLEAN WATER, the States' Nonpoint Source Assessment, 1985** provides such information and reflects the work of those who participated in this 18-month effort.

Significant progress in abating nonpoint sources of water pollution is reflected in this document; yet, considerable work remains to be accomplished. While the waters known to be impacted by nonpoint sources may appear small in comparison to the nation's total waters, it must be emphasized that: Impacted waters are a public concern of high priority and resolution of these problems is absolutely crucial to the:

- achievement of Clean Water Act's goals and
- protection of the nation's investment in point source control.

The information in this report will assist in establishing priorities for attaining further progress in abatement of nonpoint sources consistent with the goals of the Clean Water Act.

J Leonard Ledbetter

J. Leonard Ledbetter
President, ASIWPCA

Recent national reports have identified nonpoint source (NPS) pollution as a major remaining water quality problem that will prevent achievement of established water quality goals in priority waters, even when applicable point source controls have been fully implemented. The NPS assessment by ASIWPCA summarized in this report confirms these previous findings by assessing nonpoint source pollution problems and programs State-by-State using a single, consistent reporting format. In addition to summarizing its findings from the survey, ASIWPCA presents its conclusions and interpretations of this information.

I am encouraged that virtually all the States and Interstate Water Quality Management Agencies participated. I also appreciate the willingness of the State and Interstate Agencies to undertake an assessment of this complexity and scope. The highly diverse and site-specific nature of nonpoint source water quality problems requires that States assume the lead in resolving them. It is fitting, therefore, that the States should have a major role in defining the problem and setting their agenda for future action.

Clearly we must continue to broaden and refine what we know and can document about nonpoint source pollution and effective measures to abate and prevent it. This effort represents a significant step. The experience gained by the States during this project will strengthen the partnership of State, local, private and Federal interests that is so essential for lasting results. US EPA remains a continuing, enthusiastic member of that partnership. But if we are to have the water quality our citizens rightfully expect and demand, continuing our present efforts will not suffice. We must all pick up the pace — translating our growing knowledge of nonpoint source problems into accelerated and more effective action to resolve them.

Lee M. Thomas
Administrator, US EPA

AMERICA'S CLEAN WATER

The good news continues. Steady progress in State water quality programs means America's water is cleaner. Control of nonpoint sources—where pollution occurs intermittently and often in association with runoff after rainfall—is underway in the States.

In the early 1970's, reports were all too frequent of fish disappearing from rivers and streams, lakes choked with algae, and beaches posted against swimming or shell fishing.

Recognizing that there was no standard approach to cleaning up surface waters, Congress set this country on a course "to restore and maintain the chemical, physical and biological integrity of the nation's waters" through the Federal Water Pollution Control Act (Clean Water Act) of 1972. Significant funding and personnel were targeted to control municipal and industrial waste discharges, "**point sources**," and preparation of control plans for the more diffuse "**nonpoint sources**".

Under the Act, States have the "primary responsibility and rights" to prevent, reduce, and eliminate pollution. Successful implementation of pollution abatement programs necessitates coordination between State, Federal and local governments along with the commitment of the private sector and general public.

Thirteen years ago, the Clean Water Act established the national goal of "providing for the protection and propagation of fish, shellfish and wildlife and for recreation in and on the water . . . wherever attainable." States have set these designated uses as ultimate water quality targets in most of the nation's waters and continually assess their pollution control efforts to determine whether **designated uses** are achieved.

*Of the Nation's 1.8 million miles of streams, 58% are generally free from known water quality pollution problems. The remaining 42% (758,000 miles) represent the geographic locations supporting America's population and/or industrial activity.**

In 1984, in *America's Clean Water* the States, through the Association of State and Interstate Water Pollution Control Administrators (ASIWPCA), reported to Congress, State leaders, and the public on ten years of accomplishments in water pollution control. They assessed 758,000 stream miles and 16.3 million lake acres and found that:

- 47,000 stream miles and 390,000 lake acres improved in quality between 1972 and 1982.
- For those waters assessed in 1982:

STATUS OF DESIGNATED USES	RIVERS (miles)	LAKES (acres)
Supported	64%	84%
Partially Supported	22%	10%
Not Supported	5%	3%
Unknown or Not Reported	9%	3%

- These improvements were made even though the nation's population increased 11% and the use of surface waters for recreation and industry increased substantially.

These statistics demonstrate the benefits of the sizeable investment in point source controls over the last decade. As a result, many of the nation's waters currently meet the goals of the Clean Water Act and are now fishable and swimmable.

**America's Clean Water, the States' Evaluation of Progress, 1972-1982*

[Terms shown in **bold** *are defined in the Glossary.]*

NONPOINT SOURCE POLLUTION:
State Management

With point source controls in place, States are still finding some waters do not fully achieve their designated uses. In some instances, "nonpoint source" pollution is the culprit. This form of pollution comes from agriculture, construction, mining, etc.

Congress addressed "nonpoint sources" under Section 208 of the Clean Water Act, which required State water quality management planning. This planning process systematically assessed the quality of the nation's waters and developed solutions to water quality problems. The results have been significant, particularly after 1976 when a Federal court decision reaffirmed that States had the authority to set the priorities and manage programs under the Clean Water Act. State nonpoint source program planning has focused on:

- cleanup of waters that do not meet designated uses or are particularly valuable and vulnerable to human activity, and
- tackling the most significant problems first, because they often mask the effects of more subtle or complex pollution.

ASIWPCA's NONPOINT SOURCE ASSESSMENT:
The Baseline

Nonpoint source related programs have been underway for more than half a century. However, until now there has been no consistent national information base to describe either the extent of nonpoint source pollution or the effect of existing programs on water quality management.

At the request of the U.S. Environmental Protection Agency (US EPA), ASIWPCA accepted the challenge to assemble a baseline of current information from State water quality agencies. The survey parameters and format were developed and tested by a Steering Committee of State agency officials. Forty-nine States, three Territories, three Interstate Agencies, and the District of Columbia joined together, through ASIWPCA, to assemble and analyze the information. This report is the result of that effort.

The report is based on both quantitative data and narrative information; the text of each State's submission is published in the Appendix to this report.

For this baseline, States report primarily about water quality within their boundaries. Certain waters, including the Great Lakes, the Colorado River, and major estuaries such as Chesapeake Bay and Puget Sound, are the subject of interstate and international initiatives and are addressed in more detail in the respective State submissions.

Management Strides

The process of collating and reviewing existing State and Federal information has been extremely useful to State program managers in focusing attention on:

- the need to treat nonpoint source pollutants as a priority,
- present State activities in this area and the effectiveness of management programs,
- the need for improved communication among State, Federal, and local agencies interested in nonpoint source management, and
- the necessity to develop further data for assessment of nonpoint source pollution problems and implementation efforts.

The information in this report represents program implementation to date. Over time, nonpoint source pollution control programs will advance and gaps in the present data will be filled. ASIWPCA views this report as an important baseline for periodic assessment of nonpoint source management programs in the future.

Of the Nation's 39.4 million acres of lakes, 59% are generally free from known water quality pollution problems. The remaining 41% (16.3 million acres) represent the geographic locations supporting America's population and/or industrial activity.*

NONPOINT SOURCES: The States Report on Surface Waters

TOTAL SURFACE WATERS of the UNITED STATES

The States report 1.8 million miles of rivers and streams and 39.4 million acres of lakes in the United States. In addition, they include more than 32,000 square miles of estuaries, and 57,000 miles of ocean coastline.

SURFACE WATERS IMPACTED BY NONPOINT SOURCES*

For this assessment, the States (including Territories and the District of Columbia) documented nonpoint source pollution effects on the designated uses of waters and the threat from nonpoint source activities to waters that are currently maintaining their use. This report examines *priority* nonpoint source pollution problems using long-term monitoring data, short-term water quality surveys, best professional judgement, and citizen observations. It is important to note that the historical emphasis of water quality data and surveys has primarily targeted on point source pollution. This emphasis may need, in the future, to be broadened to accommodate nonpoint source complexities.

States report that the majority of the nation's surface waters have minimal to *no known* significant impacts from nonpoint sources. Where nonpoint source pollution is a problem, the impact is generally localized, with no identifiable nationally uniform cause or solution.

Rivers

The States assessed in detail the impacts of nonpoint source pollution for 404,000 miles of rivers (27% of total river miles). In these assessed waters they found:

- 278,000 miles have **no use impairment** from nonpoint sources;
  However, 48,000 miles which are not impaired are **threatened** by nonpoint source pollution.
- 87,000 miles are **moderately impaired**.
- 30,000 miles are **severely impaired**.
- 9,000 miles are **undistinguished waters** which have use impairments, but the source cannot be distinguished by available information as nonpoint or point in origin.

Lakes

States assessed in detail the impacts of nonpoint source pollution for 15.4 million acres of lakes (58% of total lake acres). This includes 4.7 million acres of lakes smaller than 5,000 acres and 10.7 million acres of lakes and reservoirs larger than 5,000 acres. In these assessed lakes they found:

- 10.9 million acres have **no use impairment** from nonpoint sources;
  However, 3.7 million acres which are not impaired are **threatened** by nonpoint source pollution.
- 3.5 million acres are **moderately impaired**.
- 880,000 acres are **severely impaired**.
- 88,000 acres are **undistinguished** waters with use impairments whose source may be nonpoint or point in origin.

Lakes and estuaries are particularly vulnerable to nonpoint source pollution because they often serve as natural "sinks" for pollutants transported by rivers and tributaries.

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* The following discussion of total and assessed waters (surface water impacts, nonpoint pollutants and sources) does not include data for Alaska. Excluding Alaska, States report there are:
~ 1.48 million river miles
~ 26.6 million lake acres
~ 32,000 estuary square miles, and
~ 23,000 ocean coastline miles

Alaska's data, reflecting vast resources of land and water with relatively low impact of human activity, has the potential to mask the effects of pollution as reflected in statistics for the other 56 participating States. For specifics related to Alaska's program, please consult the Appendix of State submissions.

WATER QUALITY AND NONPOINT SOURCE IMPACTS, 1985

[illegible]

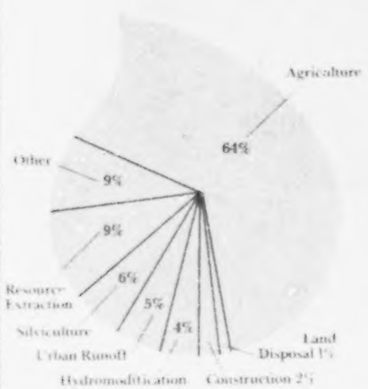
POLLUTANTS AND NONPOINT SOURCES

[illegible]

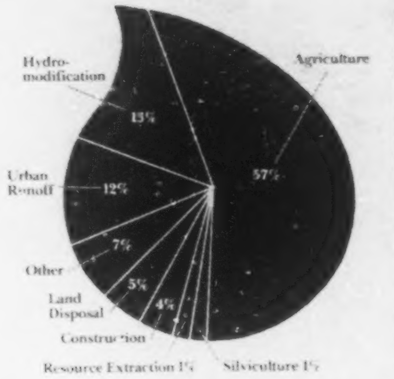
Control of Nonpoint Source Pollution

[illegible]

PRIMARY NONPOINT SOURCES IN IMPACTED* WATERS



LAKES
8.1 Million Acres



NONPOINT SOURCES: Number of States Where an Activity is the Most Widespread Primary Cause of Nonpoint Source Problems**

			LAKES	Most Widespread	Second Most Widespread
Agriculture	27	10	Agriculture	21	10
Resource Extraction	6	6	Urban Runoff	4	10
Urban Runoff	5	8	Resource Extraction	3	2
Hydromodification	2	0	Hydromodification	3	2
Land Disposal	2	1	Land Disposal	2	3
Construction	1	1	Construction	2	2
Silviculture	0	2	Silviculture	0	2
Other	5	0	Other	5	0
Total Number of States Reporting	46	43	Total Number of States Reporting	41	38

* Impacted waters are those in which uses are severely or moderately impaired by nonpoint sources or in which nonpoint sources threaten to impair the designated use.
** "Widespread": the primary nonpoint source of pollution with the largest number of river miles or lake acres in each State.

Urban Runoff — In surface waters, urban runoff is the primary nonpoint source causing impacts for:

- 972,000 lake acres,
- 8,000 river miles, and
- 1,000 square miles of estuaries.

Urban runoff, which is more significant in lakes than rivers, often contains nutrients, toxics, oxygen demanding materials, and pathogens and increases water temperatures. Such runoff originates from streets, residential neighborhoods, industrial sites, parking lots, and combined sewer overflows.

Land Disposal — Land disposal is the primary nonpoint source in 405,000 lake acres and 2,000 river miles. Pollutants most often related to land disposal are pathogens, nutrients, and toxics.

Land disposal activities include septic tanks, land application of sewage sludge, and landfills. Such activities particularly affect lakes in the densely populated Northeast.

Construction — Impacts from construction activities are highly localized and periodic. Construction is the primary nonpoint pollution activity in 324,000 lake acres and 3,000 river miles.

Land development and highway construction can impact water quality significantly, but because of their episodic nature they are difficult to quantify. Impacts identified by the States are generally confined to urban and suburban areas and those with resource development. The effects of such pollution can be minimized by limiting soil exposure during construction and assuring proper maintenance of drainageways. Nonpoint source pollutants most often related to construction are sediment, toxics, and habitat alteration.

Silviculture — Silviculture (forestry) is the primary cause of nonpoint source problems in 10,000 river miles and 81,000 lake acres. Problems most frequently reported in rivers are sediment and habitat alteration. Sediment, oxygen demand and acidity resulting from silvicultural activity are most often associated with lakes.

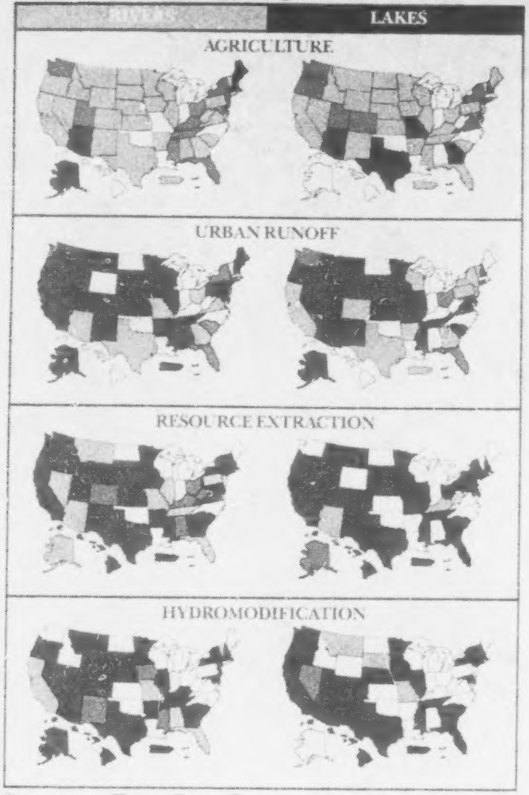
Silvicultural impacts are highly localized and episodic, often occurring in watersheds with pristine water quality. Logging roads, in particular, are a concern. It is difficult to measure fully the water quality effects because timber harvests and related activities tend to be conducted intensely over a short term, moving quickly to other locations.

OTHER NONPOINT SOURCE ACTIVITIES

Other nonpoint source activities are also reported in various States. They include for surface waters:

- **atmospheric deposition**
- **spills of hazardous materials**
- **hazardous waste storage or disposal sites**

PRIMARY NONPOINT SOURCES:
Percentage of Impacted* Waters



▨ Greater than 50% ▩ 26-50% ▧ 10-25% ■ Less than 10% ☐ No information provided/unknown

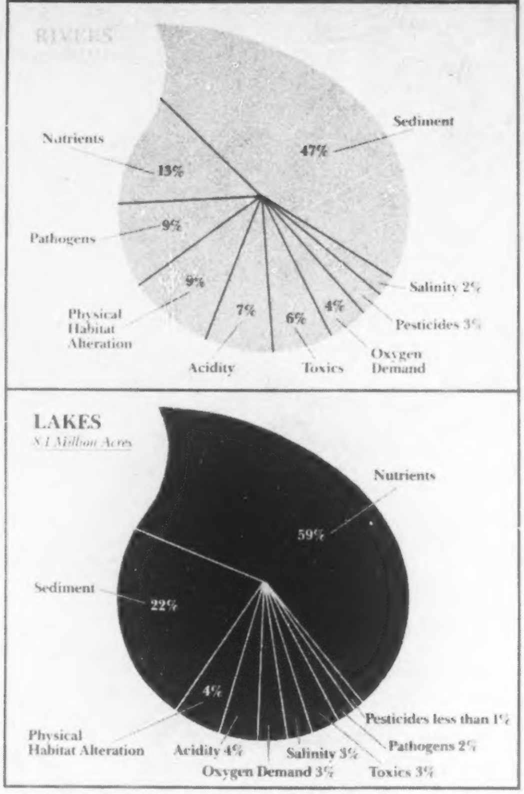
[illegible]

* [illegible]

Pollutants

A variety of nonpoint source pollutants contribute to use impairment in **impacted waters.*** Generally, the impacts are moderate or threaten uses. Due to the intermittent or temporary nature of nonpoint sources, most pollutant loadings to water bodies are related to storm events.

Primary Nonpoint Source Pollutants In Impacted* Waters



*Impacted waters are those in which uses are severely or moderately impaired by nonpoint sources or in which nonpoint sources threaten to impair the designated use.

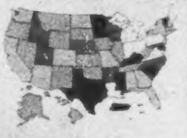
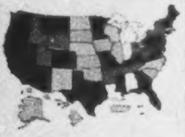
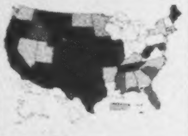
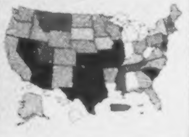
SEDIMENT

Sediment affects more river miles than any other pollutant. Human activity inevitably accelerates natural sediment production depending on the natural erodibility of soils. Sediment is an important consideration in the control of other pollutants such as nutrients and toxics (e.g. heavy metals or pesticides) since it may transport these into the aquatic environment.

NUTRIENTS

Nutrients impact more lake acres and estuaries than any other nonpoint source pollutant. They come most often from fertilizers, animal and human wastes, urban runoff, and atmospheric deposition. In addition to river miles and lake acres reported, nutrients are the primary nonpoint source pollutant in 2,000 square miles of estuaries.

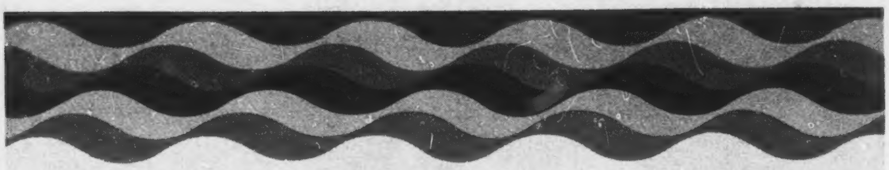
Nutrients stimulate excessive growth of algae or nuisance aquatic weeds which can eventually deplete the oxygen fish and aquatic life require to live, or render waters aesthetically unattractive or unsuitable for recreation. They are carried downstream by rivers to lakes and estuaries where they accumulate, often causing serious long-term pollution problems, particularly eutrophication.

POLLUTANTS*	IMPACTED WATERS**	PREDOMINANT SOURCES	LOCATION***
SEDIMENT **RIVER MILES** *48 States Reporting*	15,000 (S) 63,000 (M) 34,000 (T)	[illegible]	
LAKE ACRES *45 States Reporting*	276,000 (S) 1,416,000 (M) 2,332,000 (T)	Agriculture Hydromodification	
NUTRIENTS **RIVER MILES** *43 States Reporting*	7,000 (S) 32,000 (M) 22,000 (T)	[illegible]	
LAKE ACRES *47 States Reporting*	655,000 (S) 2,600,000 (M) 2,800,000 (T)	Agriculture Urban Runoff	

(S) Severely Impaired Uses (M) Moderately Impaired Uses (T) Threatened Uses

▨ Greater than 50% ■ 26-50% ▨ 10-25% ■ Less than 10% No Information Provided Unknown

[illegible]



POLLUTANTS*		IMPACTED WATERS**	PREDOMINANT SOURCES
PATHOGENS Pathogens are disease-causing organisms, including bacteria and viruses. Their presence in water is normally detected by measuring "indicator organisms" associated with pathogens. Nonpoint source pathogens generally result from animal husbandry or urban runoff.	RIVER MILES [illegible] States Reporting	8,000 *(S)* 12,000 *(M)* 28,000 *(T)*	Agriculture Urban Runoff
	LAKE ACRES *20 States Reporting*	51,000 *(S)* 230,000 *(M)* 594,000 *(T)*	**Urban Runoff** **Agriculture**
PHYSICAL HABITAT ALTERATION Aquatic life cannot exist without suitable habitat. Nonpoint source activities can disrupt habitat by covering spawning beds and feeding grounds with sediment or changing temperature and other water conditions. While physical habitat alteration is not traditionally considered a pollutant, it was important enough to include in this report.	RIVER MILES [illegible] States Reporting	3,000 *(S)* 14,000 *(M)* 5,000 *(T)*	Agriculture Hydro-modification Resource Extraction
	LAKE ACRES *28 States Reporting*	100 *(S)* 34,000 *(M)* 83,000 *(T)*	**Hydro-modification** **Resource Extraction**
OXYGEN DEMAND The decay of organic and other materials discharged to surface waters can create oxygen demand, depleting the oxygen supply necessary for fish and aquatic life. Oxygen demand from nonpoint sources most often results from animal and human waste.	RIVER MILES [illegible] States Reporting	3,000 *(S)* 21,000 *(M)* 16,000 *(T)*	Agriculture
	LAKE ACRES *34 States Reporting*	116,000 *(S)* 400,000 *(M)* 1,051,000 *(T)*	**Agriculture** **Urban Runoff** **Land Disposal**

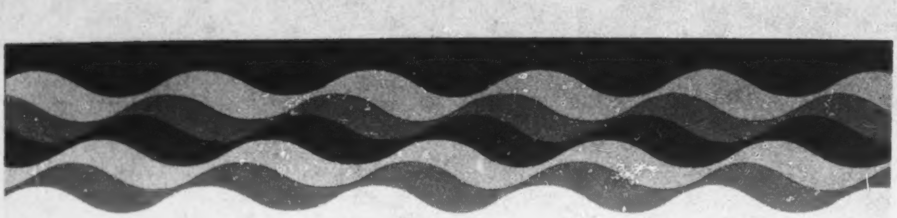
(S) Severely Impaired Uses (M) Moderately Impaired Uses (T) Threatened Uses

*States reporting include territories. **Impacted waters are those in which uses are severely or moderately impaired by nonpoint sources or in which nonpoint sources threaten to impair the designated use. Many waters are impacted by more than one pollutant. Each water is counted only once for Primary Impact, but may be counted for more than one pollutant in this chart. Therefore, the numbers in this chart do not equate to those in the Primary Impacts chart on p. [illegible]

POLLUTANTS*		IMPACTED WATERS**	PREDOMINANT SOURCES
ACIDITY Nonpoint source acidity comes from abandoned mine drainage and runoff from mining debris (e.g. tailing piles) and damages aquatic habitat. It also results from atmospheric deposition particularly in the Northeast, Mid-atlantic, and Midwestern States.	[illegible]	4,000 *(S)* 2,000 *(M)* 10,000 *(T)*	[illegible]
	LAKE ACRES *36 States Reporting*	22,000 *(S)* 41,000 *(M)* 350,000 *(T)*	**Atmospheric Deposition**
SALINITY Salinity from nonpoint source pollution is generally confined to the Western States, where it results from saline irrigation return flows. However, localized problems are also reported in Northeastern and some Midwestern States from winter road salting.	[illegible]	1,000 *(S)* 3,000 *(M)* 2,000 *(T)*	[illegible]
	LAKE ACRES *30 States Reporting*	77,000 *(S)* 107,000 *(M)* 67,000 *(T)*	**Agriculture** **Hydro-modification** **Resource Extraction**
PESTICIDES Pesticide problems from nonpoint source pollution are often localized, but may also impact large water bodies such as the Great Lakes. Most nonpoint source pesticides result from agricultural applications.	[illegible]	1,000 *(S)* 9,000 *(M)* 22,000 *(T)*	[illegible]
	LAKE ACRES *29 States Reporting*	44,000 *(S)* 161,000 *(M)* 740,000 *(T)*	**Agriculture**
TOXIC SUBSTANCES In addition to pesticides, other toxic substances such as mercury and organic chemicals may impact designated uses in surface waters. Bioaccumulation of toxic substances in fish and other aquatic resources is of particular concern.	[illegible]	2,000 *(S)* 8,000 *(M)* 5,000 *(T)*	[illegible]
	LAKE ACRES *35 States Reporting*	105,000 *(S)* 141,000 *(M)* 706,000 *(T)*	**Urban Runoff**

(S) Severely Impaired Uses (M) Moderately Impaired Uses (T) Threatened Uses

[illegible]



SURFACE WATER MANAGEMENT PROGRAMS:

The States' Approach

State water quality management agencies are the focal point for managing nonpoint source pollution problems. However, effective programs require close cooperation among State, Federal and local governments, along with private interests, and the public.

Federal programs affecting nonpoint source activities have been in existence since the 1930's. In particular, Federal soil conservation programs designed to preserve topsoil for farming have had the secondary effect of reducing sediment loads to nearby waters. In the last 10 years, more attention has been given to the potential water quality benefits of these older Federal programs.

As public attention has turned to nonpoint source pollution problems, a number of new programs have been created — and the momentum is building.

CURRENT PROGRAM STATUS

The States identify 354 State and local programs, and 32 programs in 17 Federal agencies, which manage nonpoint source activities and affect water quality. Lists of the programs and their effectiveness in each State are in the Appendix.

State and Local Initiative — **State and local governments have taken the initiative and are the predominant managers of nonpoint source programs. Most States indicate there is adequate legislative and regulatory authority to manage nonpoint sources** — only 3 States indicate that additional authority is needed.

Of the State and locally initiated programs, 69% include some degree of regulatory authority. While this authority may not have been established solely for water quality purposes, it can be used where needed. Grants, loans, tax abatement and other incentives are included in 14% of State and local programs, with most of these programs directed toward agricultural activities.

New Programs — States and localities are developing new programs in response to nonpoint source problems. Twenty-seven States report programs that are too new to be adequately evaluated for effectiveness.

- 11 States identify new State or local programs for managing all nonpoint source polluting activities.
- Half of the new programs cover agricultural sources, and
- Construction is covered by the second largest number of new programs.

Federal Programs — **Federal agency policy and activity are critical to successful nonpoint source management in many States because these agencies have jurisdiction over pollution sources and manage extensive public lands.** Some agencies have long-standing institutional relationships with the industries that contribute to nonpoint source pollution. The 17 Federal agencies identified by the States devote substantial technical and financial resources to protect and improve water quality. The most frequently listed programs are in the:

- Soil Conservation Service,
- U. S. Forest Service,
- Office of Surface Mining,
- Bureau of Land Management, and
- U. S. Army Corps of Engineers.

Local Agencies — Municipal governments, soil and water conservation districts, and other local entities often have land management responsibilities, including planning, zoning, technical assistance, and regulation which are needed to manage nonpoint source polluting activities.

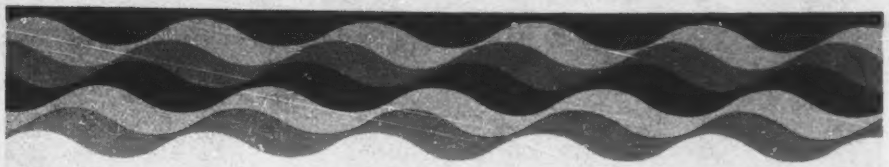
Private Interests — Industry and private land owners are important partners in nonpoint source pollution management. **Management of nonpoint source pollution begins with informing the public of the effects of their activities on water quality.**

THE STATE APPROACH:
Leadership Toward Comprehensive Programs

To provide program leadership, State water quality agencies identify several necessary elements for comprehensive management of nonpoint source pollution. Each State has a unique combination of these elements, reflecting the problems and program history of that State:

Elements of a Comprehensive State Nonpoint Source Program

ASSESSING	**Impaired water uses, pollutants and contributing activities**
DEVELOPING	**Preventive and remedial management programs**
COORDINATING	**As lead agency for other State, local and Federal agencies and private interests**
TARGETING	**Watersheds with action plans for particular pollutants, activities and sources**
FUNDING	**From private, local, State, and Federal sources**
EVALUATING	**Effects on water quality and clean-up progress**



WATER QUALITY EFFECTIVENESS

State Programs — The States rated the various nonpoint source programs for their effectiveness in achieving water quality goals. While recognizing that many of the programs were not designed for water quality purposes, these programs are very important in managing nonpoint source pollution. The States rated 259 State and local programs:

- 27% are considered fully effective;
- The majority (71%) are rated as effective in certain localities (locally effective), or partially effective Statewide; while
- Only 2% are considered ineffective.

Of the State or local programs rated fully effective, 84% include some degree of regulatory authority. A larger proportion of State and local construction, hydromodification and mining programs are rated fully effective than is true of programs for other activities.

Federal Programs — Federal programs as operated in each State receive sharply contrasting ratings from different States. No single program stands out for its effectiveness or ineffectiveness:

- 17% of the ratings are "fully effective";
- The majority (80%) of ratings are "locally effective," "partially effective" or both; while
- 3% of the ratings are "ineffective."

Types of State and Local Programs That Manage Nonpoint Source Pollution

Water Quality Programs:

Stream Alteration Control
Groundwater Protection
Stormwater Management
Erosion & Sediment Control
Volunteer Lake Sampling
Lake Protection
Well Construction
Salinity Control
Wastewater & Sludge Application
Septic System Siting
Vessel Waste Control
Hydroelectric Project Review
Animal Waste Management
Pollution Control Tax Credits

Programs for Other Purposes that have Water Quality Management Implications:

Dredge and Fill Permitting
Solid Waste Management
Hazardous Waste Management
Forest Land Management
Dredge Mining Control
Farmland Preservation
Soil Loss Limitation
Safe Drinking Water
Irrigation Diversion Permitting
Surface Mining Land Reclamation
Pesticide Applicator Licensing
Local Planning, Zoning & Development Controls
Coastal Zone & Floodplain Management
Habitat Preservation & Fishery Management
Scenic River Protection

GROUNDWATER AND NONPOINT SOURCE MANAGEMENT

Pollutants Reported As Known or Suspected Groundwater Contaminants

	Number of States Reporting		
Pollutant	Known	Suspected	Common Sources
Nitrates	34	4	Fertilizer from agricultural practices.
Petroleum	24	4	Leaking storage tanks and spills.
Other Organic Chemicals	31	4	Chemical spills, leaking storage tanks, and land disposal sites.
Bacteria	23	7	Septic systems.
Inorganic Chemicals	23	2	Abandoned mining sites and land disposal sites.
Pesticides	21	2	Agricultural activities.
Salinity	16	3	Saltwater intrusion and road salt storage and distribution.

Groundwater is the principal source of drinking water for a significant number of Americans. However, with the resource hidden from view, the traditional assumption has been that its quality is protected. As techniques for groundwater monitoring have advanced, States have become more concerned about the quality of groundwater supplies and are taking steps to protect this precious drinking water resource. Since surface waters and groundwaters can intermingle, nonpoint source pollution takes on added significance.

STATE PROGRAMS

States are expanding groundwater efforts to address cleanup of contamination along with the prevention. Comprehensive groundwater management strategies exist or are under development in 46 States. These strategies focus available authorities and resources more efficiently and effectively on nonpoint source groundwater problems. The outlook is good, with 41 States now having general authority to implement groundwater quality plans.

Nonpoint source management programs can protect both surface waters and groundwaters. These must be carefully coordinated, for control measures designed to prevent the runoff to surface waters can result in percolation to groundwater (for example, excess pesticide and fertilizer applications).

Preventive and Remedial Activities — State groundwater management programs incorporate both preventive and remedial measures. Traditional activities undertaken by water quality management agencies include cleanup of leaking underground storage tanks or leaching land disposal sites and repair of failing septic systems. However, prevention is usually less expensive and more effective than cleanup. States report a number of preventive activities underway, including:

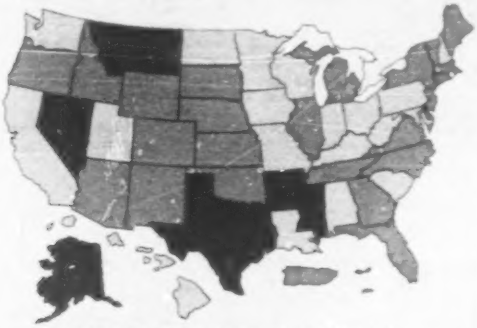
- permitting and surveillance,
- siting requirements for facilities,
- regulating discharge facilities and disposal or treatment sites,
- promoting proper pesticide and fertilizer use and animal waste management,
- public education, and
- prohibiting certain activities.

Standards — **Thirty-three States have, or are developing, groundwater quality standards and/or use classification systems.** Some of these standards relate to drinking water quality while others are used to manage industrial activities and their impacts on groundwater quality. Many States recognize the need to develop standards for organic chemicals.

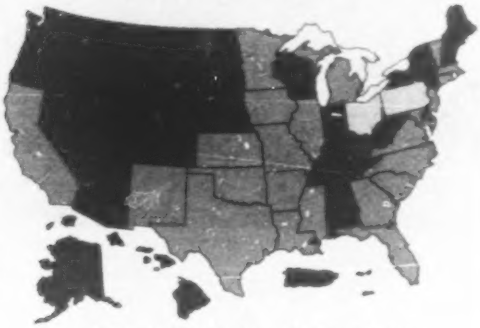
Groundwater Monitoring — All States routinely monitor potable groundwater supplies to ensure that State and Federal drinking water standards are met. Some conduct additional monitoring near potential polluters or in hydrogeologically vulnerable areas. While few standards for organics have been established at either the State or Federal levels, some States are now monitoring for organics.

Local Involvement — Groundwater contamination problems are usually site specific and require preventive land use decisions that are primarily the responsibility of local governments. States provide technical assistance to localities, exchange information on groundwater quality and management techniques, and often delegate management responsibilities, as well.

GROUNDWATER QUALITY MANAGEMENT PROGRAMS



STATES WITH GROUNDWATER QUALITY MANAGEMENT STRATEGIES



STATES WITH FIXED GROUNDWATER QUALITY MONITORING SYSTEMS

▨ Yes ☐ Under development ■ No ☐ No information provided

NONPOINT SOURCES AND POLLUTANTS

Sources of Contamination — The groundwater contamination identified by States originates from many of the same nonpoint source activities that impact surface waters. However, pollutants and sources that pose the most serious threats to surface waters do not necessarily have similar impacts on groundwater.

State capabilities to identify pollutants and sources vary more for ground than surface waters. State water quality agencies can, in most instances, identify contamination in aquifers but cannot as easily identify the number of impacted wells. Most States can link pollution sources to reported incidents of contamination but quantification of total impacts is proving to be a difficult task.

Population Impacted — In States reporting, 117 million people, or 51% of the population, rely on groundwater for their potable drinking supply.

- Groundwater serving 2.1 million people (6% of the population that depends on groundwater for potable water) has been eliminated as a supply or must be treated because of contamination. *For the 22 States reporting.*
- Contamination is suspected in groundwater serving another 2.6 million people (15% of the population dependent upon groundwater). *For the 11 States reporting.*

Activities Reported As Known or Suspected Sources of Groundwater Contaminants

TARGETED WATERS: State Nonpoint Source Management Activity

The diversity of impacts, sources, and pollutants nationwide indicates that flexible, site-specific approaches are critical to solving nonpoint source water quality problems. States are managing nonpoint sources through local as well as statewide projects. Available State, Federal, local and private resources are being targeted to priority water quality problems to assure that management efforts are successful.

Activities to control nonpoint source pollution are increasing in the States who report:

- 540 specific management projects, covering:
    - ~ 600 different surface water bodies, ranging in size from small lakes to large rivers or estuarine systems, and
    - ~ 8% of these projects specifically pertain to groundwater management, though projects often deal with both surface and groundwater problems in a given locale.

States provided detailed reports on management plans and projects for more than:

- 380,000 acres of lakes,
- 14,000 miles of rivers, and
- 1,170 square miles of estuaries.

States are less able to quantify their management activities for oceans and aquifers. As the States' nonpoint source pollution management programs advance, additional data will be available.

Impacted Waters Targeted For Project Management: 1985*

	River Miles	Lake Acres	Estuary Square Miles
Severely Impaired Uses	2,000	189,000	1,000
Moderately Impaired Uses	11,000	105,000	170
Threatened Uses	600	66,000	0

States identify other projects for which mileage and acreage are not available.

Project Status*: 1985 Five Year Management Outlook

	River Miles	Lake Acres	Estuary Square Miles
Projects Completed or in Implementation	3,000	264,000	330
Projects in Development	9,000	85,000	63
Expected Projects (Planned)	2,000	8,000	780
Other**	400	23,000	0

**States identify other projects for which mileage and acreage are not available.*

***Feasibility study or litigation underway.*

FUTURE DIRECTIONS: The States' Priorities

GAINING MOMENTUM

State water quality agencies, in leading the efforts to manage nonpoint source pollution problems, have identified their priorities:

INSTITUTIONAL RELATIONSHIPS

Management of nonpoint source pollution requires an extensive network of existing authorities and programs. In most States there is adequate legislative and regulatory authority to deal with water quality problems. **The challenge of nonpoint source management is effective coordination among existing programs and improved performance for water quality.**

Coordination — Most States indicate that institutional coordination is a high priority and identify several techniques they are using to improve that coordination to:

- obtain **clear water quality priority** statements in agencies and programs that have other primary purposes,
- **clarify roles** of the State, Federal and local partners,
- **coordinate planning and resource targeting** among management programs in the State, and
- **increase public awareness** of the importance of nonpoint source controls and the benefits that result.

Partnership — **Nonpoint source pollution problems require creative programs at the Federal level which emphasize setting milestones of progress.** The States are meeting this challenge with increased priority and more effective use of existing regulatory and management programs. The diversity of nonpoint source problems, the moderate intensity of most water quality impacts, and the localized extent of use impairments reported in this assessment do not call for the exercise of Federal authority through statutory compliance deadlines or regulation.

Due to extensive land management by Federal agencies, the priority of water quality in their agendas and programs will have a major impact on the success of nonpoint source management efforts. Recent activities of the U.S. EPA, the Soil Conservation Service, and other Federal agencies reflect a heightened awareness of nonpoint source problems.

Resources — No one entity will be able to fund the programs and projects that are needed to manage nonpoint source pollution problems; funds must come from the full range of public and private sources. In particular, resources of Federal programs for other purposes should be examined to achieve a more effective focus on nonpoint source management for water quality.

ASSESSMENT

Sufficient information exists in most States to proceed with implementation of nonpoint source management programs for priority pollutants and for some watersheds. However, further assessment of problems remains a top priority of virtually every State.

This report shows on a national scale the aspects of nonpoint source pollution that need further assessment. Assessment activities include:

- **Improved information** about the extent and intensity of pollution problems;
- **Identification of trends** in water quality for more subtle pollution problems; and
- **Verification of effects** of programs and management practices for improving water quality.

States report the need for more research on several nonpoint source pollutants, particularly toxics, nutrients, pesticides, and volatile organic chemicals. Clarification is needed, as well, on the relationship between soil loss and sediment in the water, and the effectiveness of control practices.

SUMMARY OF FINDINGS AND CONCLUSIONS

Control of the impacts of nonpoint source pollution requires significant effort; but it can be accomplished with the leadership of State water quality agencies. This effort is well underway.

ASIWPCA's Nonpoint Source Assessment Project provides a baseline for future measurement of accomplishments by nonpoint source control for the nation's surface waters and groundwaters. **It is as important to set forth in the States what is *not* known about nonpoint source pollution and groundwater, as it is to identify what is known.** Only by assembling the available data, can the nation move aggressively to build more effective pollution control programs.

FINDINGS — This report includes substantial information about nonpoint source pollution, indicating that States possess considerable knowledge and expertise related to the extent and scope of water quality problems:

- While the majority of the nation's surface waters have minimal to no **known** impacts from nonpoint sources, impacted waters constitute
  ~ 11% of total river miles
  ~ 30% of total lake acres, and
  ~ 17% of total estuary square miles.
  Nonpoint source pollutant loadings in surface waters are generally intermittent. Severe impacts cover,
  ~ 7% of assessed river miles, and
  ~ 6% of assessed lake acres.
- Comparison of State information indicates each State is unique in its nonpoint source problems and management needs.
- Sediment and nutrients are the most pervasive nonpoint source pollutants. They are the primary pollutants for:
  ~ 60% of impacted river miles, and
  ~ 81% of impacted lake acres.
  Other pollutants are significant where they occur, but use impairment is not so widespread.
- Agriculture is the most pervasive source of nonpoint pollution; it is the primary nonpoint source activity for:
  ~ 64% of impacted river miles; and
  ~ 57% of impacted lake acres,
  but like most nonpoint sources, its impacts are more often moderate or threatened, rather than severe.
- 41 States have sufficient authority to protect groundwater; virtually all States are moving forward with programs.
- Sufficient information exists to proceed implementing nonpoint source management programs for priority pollutants in some watersheds. 48 States have targeted waters for nonpoint source management.
- To effectively monitor and chart the complexities of nonpoint source pollution, evaluation techniques may need to be broadened and enhanced.

CONCLUSIONS — States have described and evaluated many existing programs that can effectively manage nonpoint source problems.

- Effective management of nonpoint source pollution requires a partnership among State, Federal and local agencies, along with private interests and the public.
- Coordination among existing programs (and enhanced performance), under the leadership of the State water quality agency, is the primary challenge of nonpoint source management.
- Nonpoint source pollution management is heavily dependent on increasing the priority of water quality goals in existing programs designed for purposes other than water quality, particularly Federal programs with their nationwide scope.
- The diversity of nonpoint source pollution problems requires that management solutions be carefully planned site-by-site, on a watershed basis, for maximum effectiveness.

LOOKING AHEAD — During the process of developing this nonpoint source baseline, it became abundantly clear that:

~ A great deal of nonpoint source work is going on at the State, Federal, and local levels, and
~ In many States, much remains to be done.

In Summary, the States have concluded that there is a need to:

- Increase emphasis on implementation of nonpoint source management programs;
- Focus more on preventing water quality problems, along with continuing efforts to restore designated uses of water bodies;
- Continue problem assessment and research on unresolved issues; and
- Increase public awareness of nonpoint source pollution problems and management solutions, particularly those that involve private activity.

Within a decade, the results of current programs and management planning will be demonstrably clearer and State water quality agencies will document the progress as the 1984 *America's Clean Water* demonstrated for point source pollution.

In the interim, State water quality agencies will report periodically about nonpoint source pollution problems and management efforts.

As this Nation moves forward in the development and implementation of the nonpoint source pollution program, it is ASIWPCA's hope that the information contained in this assessment will focus policy dialogue. The substance of the discussions, as well as working relationships built during the project, should enhance program implementation and lead toward further achievement of the clean water goals.

GLOSSARY

DESIGNATED USES
The official designated uses for water bodies in the State's Water Quality Standards; common uses include aquatic life and propagation, recreation, drinking water, irrigation, and industrial processes.

ESTUARIES
Regions of interaction between rivers and near-shore ocean waters, where tidal action and river flow create a mixing of fresh and salt water.

IMPACTED WATERS
Surface waters in which uses are severely or moderately impaired by nonpoint sources or in which nonpoint source pollution threatens to impair the designated use.

IMPAIRED DESIGNATED USES
Interference with designated uses as a result of nonpoint source pollution; see definitions for severe impairment and moderate impairment.

MODERATE IMPAIRMENT
Nonpoint source pollution that interferes with designated uses of a water body, but does not always preclude its use.

NONPOINT SOURCES:
Those diffuse sources of pollution that are not covered by a site-specific Federal permit. The most common nonpoint source activities are agriculture, hydromodification, resource extraction, urban runoff, land disposal, construction, and silviculture.

Pollution problems that are being appropriately dealt with by Federal permit programs are considered point sources. Natural pollution is not included in this assessment except where it cannot be differentiated from nonpoint source pollution resulting from human activity.

NO USE IMPAIRMENT
Waters that now support their designated uses; however, the designated uses of some of these waters may be threatened by nonpoint source pollution (see definition of threatened waters).

POINT SOURCES
Pollution sources that are presently covered by site-specific Federal permit programs, such as industrial and municipal sources, active mines, and large cattle feedlots.

POLLUTANT
A particular material in or condition of a water body that impairs or threatens to impair the designated use of that water body. The most common nonpoint source pollutants are: sediment, nutrients and fertilizer, pathogens, physical habitat alteration, oxygen demand, acidity, salinity, pesticides, and other toxics.

PRIMARY NONPOINT SOURCE CATEGORY
The nonpoint source activity that more than any other category, is the source of the pollution in a particular impacted water body.

PRIMARY NONPOINT SOURCE POLLUTANT
The nonpoint source pollutant that, more than any other pollutant, pollutes a particular impacted water body.

SEVERE IMPAIRMENT
Preclusion of a designated use of a water body by nonpoint source pollution resulting from human activity.

TARGETED WATERS
Water bodies impacted by nonpoint source pollution, for which the State expects within the next five years to develop, implement or begin planning for management of polluting activities.

THREATENED WATERS
Water bodies that currently meet designated uses, but data or assessment information indicate:

1. an existing or potential downward trend in water quality that, in the absence of additional management, will lead to impairment of designated uses within the next five years, or
2. potential, in the professional judgement of State officials, for degradation of significant pristine and fragile waters.

UNDISTINGUISHED WATERS
Waters known to be impaired by pollutants, but it is not known if the pollutants come from point or nonpoint sources (see definitions of point sources and nonpoint sources).

WATER QUALITY EFFECTIVENESS
The degree to which a government program that manages a nonpoint source polluting activity achieves its responsibility for protecting the water from pollution by that activity. The effectiveness ratings used in this survey are:

- Fully — fully effective everywhere in the State,
- Locally — effective in some localities, but not everywhere,
- Partial — has some effect, but needs significant improvement,
- Ineffective — ineffective everywhere, or
- New — too new to assess.

THE ASIWPCA NONPOINT SOURCE ASSESSMENT PROJECT

America's Clean Water, The States' Nonpoint Source Assessment 1985 was produced by the Association of State and Interstate Water Pollution Control Administrators (ASIWPCA) as part of a project undertaken in cooperation with the U.S. Environmental Protection Agency (US EPA).

ASIWPCA, the national professional organization of the State environmental directors who on a daily basis implement the nation's Clean Water Program, has for many years promoted national understanding of Clean Water Act programs. State assessment of water quality and current activities is a fundamental part of that effort.

In 1984, lack of information at the national level on nonpoint source problems and State programs led the Association to design a format for State Water Quality Agency compilation of valid and consistent existing information on:

- the nature, extent, and location of nonpoint sources causing priority problems in surface and groundwaters,
- status of nonpoint source water quality programs in the States,
- accomplishments of State programs,
- effectiveness of management techniques, and
- future program needs.

This report is based on State responses received in accordance with the format and instructions developed by ASIWPCA. All States, Territories and Interstate Water Quality Agencies were asked to complete the format within three months of receipt and incorporate available information from other State, Federal, and local agencies.

States indicated where specific questions did not apply or information was unavailable. Quantitative information was supplemented by narrative descriptions of program highlights and priority concerns along with detailed maps of surface water and groundwater quality. When completing the format, State Water Quality Agencies were encouraged to supplement monitoring data with professional judgement and direct observations. The quantitative information in this report is a compilation of the submittals received by ASIWPCA. It is not intended to be a scientific or statistical analysis; rather, it serves as the State Water Quality Administrators' perspective on the programs they manage.

ASIWPCA is optimistic that this report will become the national baseline for reporting on progress of nonpoint source programs in the future. The biennial Section 305(b) report, required under the Act, is a suitable vehicle for regular updates. In addition to this report, the following products are available from the Association:

- Appendix of State submissions,
- Citizen Primer on State Nonpoint Source Programs,
- America's Clean Water: The States' Nonpoint Source Management Experience, and
- Goals, Expectations, and Future Directions of State Nonpoint Source Programs: National Retreat Proceedings, November, 1984.

Project activities were guided by State and Federal officials. Members of the Steering Committee and their staff representatives merit recognition for their contributions toward making the project successful.

THE STEERING COMMITTEE

Project Co-Chairs:
Reginald LaRosa, *Vermont*
Roberta (Robbi) Savage, *ASIWPCA's Executive Director*

State Members:
Louis Bercheni, *Pennsylvania*
Michael Campos, *California*
Mark Coleman, *Oklahoma*
William Eichbaum, *Maryland*
John Gaston, *New Jersey*
Roger Kanerva, *Illinois*
Leonard Ledbetter, *Georgia*
Robert Moore, *Connecticut*
Al Murrey, *Idaho*
James Nelson, *South Dakota*
Charles Stiefermann, *Missouri*
Leo Weaver, *Ohio River Valley Water Sanitation Commission*
Lyman Wible, *Wisconsin*

Federal Members:
Jack Ravan
(April 1984–May 1985),
Henry Longest
(May 1985–September 1985),
Assistant Administrator for Water U.S. Environmental Protection Agency;
Robert Broadbent,
Assistant Secretary for Water and Science, U.S. Department of the Interior; and
Peter Myers,
Chief of U.S. Soil Conservation Service, U.S. Department of Agriculture.

The Task Force:
Ed Anton, *California*
Bruce Baker, *Wisconsin*
Fred Banach, *Connecticut*
Robert Clarke, *Illinois*
David Clough, *Vermont*
Jack Dozier, *Georgia*
Thomas Fair, *U.S. Department of the Interior*
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George Horzepa, *New Jersey*
John Howland, *Missouri*
Larry Koenig, *Idaho*
William Markley, *South Dakota*
Kenneth McElroy, *Maryland*
Carl Myers, *US EPA*
Walter Rittal, *U.S. Department of Agriculture*
Paul Swartz, *Pennsylvania*
Peter Tennant, *Ohio River Valley Sanitation Commission*

Project Director:
Roberta (Robbi) Savage,
ASIWPCA Executive Director

Project Manager:
Lin Eichmiller,
ASIWPCA Deputy Director

Project Staff:
Steven D. Livengood, *Senior Policy Analyst*
Katharine Wilson, *Environmental Policy Analyst*

The Association also expresses its appreciation to the following who assisted in document preparation:
Sauny Ikenberry, *Executive Assistant*
Miriam Popp, *Policy Analyst*
Michael Hough, *Administrative Assistant*
Leslie Shoemaker, *State Exchange Personnel*
Christine Beekman, *Intern*

For further information about ASIWPCA or this report, contact Robbi J. Savage, Executive Director, at (202) 624-7782.

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This document has been reviewed and approved for publication by the Office of Water of the U.S. Environmental Protection Agency (US EPA). While US EPA believes that the data used form a valid base for a national report, approval does not signify that the contents reflect the views and policies of the Agency.

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Natural Resources
Defense Council

1350 New York Ave., N.W.
Washington, DC 20005
202 783-7800

TESTIMONY OF

NATURAL RESOURCES DEFENSE COUNCIL, INC.

BEFORE THE SUBCOMMITTEE ON FISHERIES AND WILDLIFE CONSERVATION
AND THE
SUBCOMMITTEE ON OCEANOGRAPHY

OF THE

HOUSE COMMITTEE ON MERCHANT MARINE AND FISHERIES

ON THE IMPACTS OF NONPOINT SOURCE POLLUTION ON COASTAL WATERS

JULY 13, 1988

Prepared by:

Paul Thompson
Resource Specialist

Robert W. Adler
Senior Attorney

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New York Office:
122 East 42nd Street
New York, New York 10168
212 949-0049

Western Office:
90 New Montgomery
San Francisco, CA 94105
415 777-0220

New England Office:
850 Boston Post Road
Sudbury, MA 01776
617 443-6300

Toxic Substances
Information Line:
USA: 1-800 648-NRDC
NYS: 212 687-6862

I. INTRODUCTION

Thank you for the opportunity to testify today. My name is Robert W. Adler. I am a Senior Attorney and Director of the Clean Water Project of the Natural Resources Defense Council, Inc. (NRDC). With me today is Paul Thompson, a Research Specialist who works primarily on the nonpoint source issue. NRDC is a nonprofit, public interest organization dedicated to protecting public health and the environment through scientific research and legal advocacy.

Since January, 1987, NRDC has been conducting a study of state, regional and local nonpoint source (NPS) pollution control efforts. Consequently, we have had numerous opportunities to talk with NPS managers, interested private parties and university researchers about the severity of NPS water pollution in coastal areas as well as the barriers to and requirements for effective NPS management.[1] In addition to the work at NRDC, many other organizations (including federal agencies) have investigated various aspects of NPS pollution. Our research, and that of others, has indicated that significant progress needs to be made in NPS pollution control. Namely, NPS pollution control requires extensive, ongoing planning and management at the local level, as well as continuous and aggressive leadership, oversight, enforcement and funding at the state and federal level.

II. Coastal NPS Pollution Is Already the Most Significant Cause of Water Pollution in Estuarine and Coastal Waters, and Is Increasing in Magnitude

In part due to the work of this Committee, a record of the magnitude of estuarine, near coastal and marine water pollution is building.[2] And NPS pollution is a major part of this problem. Runoff and leaching from urban, industrial, agricultural, silvicultural, mining and grazing lands currently are the major cause of water quality degradation in the country.[3] EPA has determined that NPS pollution is the cause of impairment of beneficial uses of estuarine waters more often than point sources.[4]

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[1] Under CWA Section 319, states are required to develop a management program to reduce NPS impacts to navigable waters "to the maximum extent practicable."

[2] See generally, Douglas N. Radar, PH.D., Hearing Before the Fish and Wildlife Conservation Subcommittee and the Oceanography Subcommittee, House Committee on Merchant Marine and Fisheries, Coastal Pollution, November 18, 1987 and Dr. Howard Levenson, Hearing Before the Environmental Protection Subcommittee, Senate Committee on Environment and Public Works, Protection of U.S. Estuaries and Coastal Waters, April 20, 1988.

Unlike point source water pollution, NPS pollution is pervasive and intimately tied to land use. The complexity of NPS pollution, in terms of numbers of polluters and the types of activities that cause the pollution, requires an approach fundamentally different from the federal- and state-dominated National Pollution Discharge Elimination System utilized to control point-source pollution.

The increasing level of estuarine water pollution comes, in part, with accelerating population growth and urban development (and the resulting potential NPS impacts) in coastal areas.[5] While it is difficult to research this issue on the national level without oversimplification,[6] state, regional and local NPS officials and coastal managers agree with this assessment.[7]

Without additional control of pollutant sources, water quality problems in these areas will continue to increase.[8] NPS pollution from agricultural and urban areas will play a major role in the increase.[9]

In Florida, for instance, data to be included in the state NPS Pollution Assessment[10] indicate that already the beneficial uses[11] of almost all of the estuarine and coastal waters of the state are known or suspected of being impaired or threatened by NPS pollution.[12] Primary pollutants include sediment, nutrients, bacteria, pesticides, toxic metals, habitat destruction and flow alteration.[13] Such pollution can, and has, resulted in finfish and shellfish kills, algal blooms, destruction of aquatic plants, and swimming bans.[14]

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[3] United States Environmental Protection Agency, National Water Quality Inventory: 1986 Report to Congress, at 4.

[4] Id. at 43.

[5] Id. at 41.

[6] For instance, the EPA National Water Quality Inventory cited above assessed only 55% of the estimated 32,000 sq/m of estuarine waters in the United States.

[7] The NRDC study has involved discussions with officials from the following coastal states: Maine, New York, Massachusetts, Delaware, Maryland, Virginia, North Carolina, Florida, California, Oregon and Washington.

[8] Levenson, supra note 2, at 2,8,9.

[9] Id.

[10] In CWA Section 319, states are required to conduct an assessment of state waters that "without additional action to control nonpoint sources of pollution, cannot reasonably be

Similar kinds of NPS pollution in the Chesapeake Bay are thought to be responsible for many of the same water quality impacts.[15] Here, too, NPS pollution is most likely the primary factor, especially for impacts associated with sediment and nutrients, although NPS runoff and leaching of toxic pollutants are by no means insignificant.[16] Groundwater is also adversely effected by NPS pollution. Baseflow, which is the groundwater-supplied component of surface water, plays a significant role in the hydrology of most stream systems on the east coast, especially in

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expected to attain or maintain applicable water quality standards or the goals and requirements of [the CWA]". See, CWA Section 319(a).

[11] The designation of beneficial uses for particular water bodies is one part of the water quality standards of the CWA. Water quality standards set the goals and provide the basis for regulations and management strategies for particular water bodies. States must assign designated uses (such as the "fishable/swimmable" goal of the CWA, drinking water, cold water fishery, etc.) to each water body in the state and develop scientific numeric and narrative criteria to define when these uses are being attained. A particular use must be assigned to a waterbody if it can be attained by "the imposition of effluent limits ... and cost effective and reasonable best management practices for nonpoint source control". See, 40 CFR Part 131.

[12] Florida Department of Environmental Regulation, Nonpoint Source Management Section, 1988 Nonpoint Source Assessment Database (computer printout).

[13] Id.

[14] Id.

[15] Choices for the Chesapeake: The First Biennial Review of the Action Agenda, Chesapeake Bay Commission, September, 1985, at 39; U.S. EPA, Chesapeake Bay Restoration and Protection Plan, September 1985, at I.p.2.-I.p.4. and U.S. EPA, Chesapeake Bay Program Technical Studies: A Synthesis, September 1982, at i.-xii. (hereinafter collectively cited as Chesapeake Bay Program).

[16] Id.

dry weather. It is now thought to be a primary source of nitrate, a nutrient responsible for depleted oxygen levels in the Chesapeake Bay.[17]

Apart from sediment and nutrient impacts, important estuaries and near-coastal waters, such as San Francisco Bay and Hampton Roads, Virginia, have also been severely damaged by NPS toxic pollutants.[18] EPA information also indicates that stormwater and urban runoff can contribute substantially to loadings of toxic and other pollutants. Stormwater can contain sediment, toxic heavy metals, organic and inorganic chemicals, nutrients, spilled petroleum products, septic wastes, and other pollutants.[19] NPS pollution, therefore, poses most of the same water quality threats that point sources do, only in a fashion far more difficult to identify and control.

The presence of toxic metals in stormwater was demonstrated clearly by sampling conducted under EPA's National Urban Runoff Program (NURP).[20] Over 75% of stormwater samples contained lead, zinc and copper. Between 50% and 75% of the samples contained arsenic and chromium; and other samples contained cadmiun, nickel, cyanides, antimony, beryllium and selenium. EPA has recognized for over a decade that stormwater results in a "significant pollution load on the nation's waters," and "should be the object of pollution abatement programs."[21]

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[17] Madariaga, Bruce, Assessing Current Cost-Share Programs for Agricultural Best Management Practices Within the Chesapeake Bay Drainage Basin, Second Annual Conference on the Economics of Chesapeake Bay Management, May 28-29, 1986, at 4.

[18] California Regional Water Quality Control Board (San Francisco Bay Regional), Water Quality Control Plan- San Francisco Bay Region (Final Draft), December 1986, at 4-60 through 4-62; Richard Whitsel, California Regional Water Quality Control Board (San Francisco Bay Region), March 23, 1988 (personal conversation); Chesapeake Bay Program, *supra* note 15; and Comprehensive Elizabeth River Water Quality Management Plan- Preliminary Management Recommendations, Hampton Roads Water Quality Management Agency, December 1986, at 31, 79-89.

[19] U.S. EPA, Report to Congress: Nonpoint Source Pollution in the U.S., January 1984, at 2-32.

[20] *Id*.

[21] 41 Fed. Reg. 11303, 11304 (March 18, 1976).

III Estuarine and Near-Coastal NPS Pollution Control Officials Recognize the Need for Changes at All Levels of Government

Almost without exception, the message from the "front-line", where field-level NPS programs are actually implemented, is that the degree and nature of NPS pollution impacts is overpowering current control efforts. State and local officials are convinced of the severity of NPS pollution. But they do not have the resources--money, personnel and political backing--to do the job.

One of the most persistent complaints is the lack of federal funding for both the Clean Water Act (CWA) Section 319 NPS Management Program and grants to coastal states operating programs under the Coastal Zone Management Act (CZMA). Many officials believe that federal funding is the limiting factor that directly determines the effectiveness of NPS programs. Others indicate that if the federal government does not show concern over a problem through technical and financial assistance, administrative and political support for aggressive state and local programs is impossible.

We need to ask ourselves what can be done to stem the tide of increasingly severe NPS impacts. We need to alter the current administrative and management "mindset" that frustrates innovative program efforts and that limits new potential management options. In addition to low levels of funding, barriers to effective NPS management include improper political considerations, poor policy development and planning, and vague, insufficient leadership and oversight.

IV Problems Have Arisen Because NPS Pollution Control Involves a High Degree of Intergovernmental Coordination, Ongoing, Aggressive Oversight and Local Planning

Complex, entrenched management problems are endemic at all levels of government. They cannot be resolved without action taken in the federal, state and local governments. For example, localities may sacrifice NPS management for political expediency--pollution control may give way to development that promises jobs and economic growth. This problem can often be addressed only by action taken in the state capital. Action at the state level, in turn, might not occur without prompting by federal officials.

There is a tendency at the federal level to view each environmental problem only from simplified, strategic ground and to focus problem analysis on the identification of an optimal, (hopefully) one-time regulatory "fix". State and local coastal managers and NPS officials, however, perceive the problem (and solution) quite differently.

Many state and local officials recognize the need to develop an on-going, integrated, local and regional planning process with the discretion to take whatever action is necessary to control a given NPS problem. On the other hand, such an approach is bound to fragment and fall prey to political considerations unless there is an aggressive, clear and well enforced set of policies and program criteria at the state and federal levels of government.

While the EPA is in a position to ensure that approved NPS management programs contain effective NPS controls, it is doubtful that this will be the case given the lack of guidance exercised at the federal level. By merely duplicating the minimum requirements contained in CWA Section 319, it is unlikely that current NPS guidance for state NPS programs will ensure that such programs will reflect current advances in NPS management.

Any solutions to coastal NPS water pollution, therefore, must incorporate, at all levels of government, interdependence, flexibility, long-term planning and leadership. The following NPS management needs reflect the realization that effective control cannot be achieved by federal and state "one-time" regulatory fixes or a "hands-off" approach to program oversight and enforcement.

A. Coastal Waters Should Be Protected by NPS Control Efforts Located Outside as well as Within the "Coastal Zone"

Protecting coastal waters requires effective NPS management not only in coastal areas, but in all others that contribute significant NPS pollutant loads to coastal water bodies.[12] NPS programs need to be based on watershed-specific water quality goals and NPS loading reduction targets. The effectiveness of programs to control development at the shoreline of coastal waters or tributaries, such as the innovative North Carolina Coastal Area Management Act and the Maryland Critical Areas Program, are severely limited when massive loads of sediment and nutrients are transported to coastal areas from upstream sources.

Thus, programs that manage all significant sources of pollution to coastal waters are required. Some effective models for comprehensive NPS management _do_ exist. The NPS program in Washington State's Puget Sound, for example, requires that all localities in the Puget Sound basin develop comprehensive, coordinated NPS management programs.[33]

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[12] Radar, _supra_ note 1, at 4.

Florida developed state planning criteria that require all counties and municipalities to address water quality considerations in their comprehensive plans.[34] While only coastal localities must prepare coastal management plans, the indirect NPS impacts from non-coastal areas can be addressed through state and regional review of local water quality impacts and management efforts. The state Surface Water Improvement and Management (SWIM program provides a useful model whereby regional goals and programs are developed for particular water bodies based on the control of both point and nonpoint sources.[35]

B. NPS Programs Designed to Protect Coastal Waters Must Address the Cumulative Impacts of Small- and Medium-Scale Urban Development and Agriculture

Large-scale developments cause severe and immediate impacts. But the cumulative effects of general, long-term development also can be responsible for large increases in NPS water pollution.[36] For example, the water quality problems in the saltwater portion of the Tar-Pamlico River system in North Carolina are most likely due to overall changes in land use patterns in the river basin.[37] The most effective way to address the NPS impacts of general development is by using land use controls such as zoning, critical areas protection programs, and subdivision and site plan review ordinances.[28]

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[33] 1987 Puget Sound Water Quality Management Plan, Puget Sound Water Quality Authority, January 1987, at 1-2, 5-6, 5-7 and, see generally, WAC Chapter 400-12, Parts 1-7.

[34] See generally, Laws of Florida, Chapter 85-55 and F.A.C. Chapter 9J-5.

[35] See generally, Laws of Florida, Chapter 87-97.

[36] Buresh, James C., State and Federal Land Use Regulation: An Application to Groundwater and Nonpoint Source Pollution Control, 95 Yale L. J. 1443 and, see generally, Hague, Bart, Handling Cumulative Impacts in Nonpoint Source Programs, Lake and Reservoir Management, Vol III, North American Lake Management Society, 1987, at 131-137.

[37] North Carolina Department of Natural Resources and Community Development, Surface Water Quality Concerns in the Tar-Pamlico River Basin (Report No. 87-04), December 1987, at i.

The application of these tools to control NPS pollution has been investigated extensively by the Long Island Regional Planning Board. In that area, many localities have adopted land use controls geared to protect water quality by guiding general development.[29] Guidance, as well as a local water quality planning process, has also been developed in Minnesota.[30] At least two Minnesota counties have begun to revise land use plans, environmental programs and zoning ordinances and maps as part of this process.[31] In Florida, state review of local comprehensive plans is just beginning, with many changes possible in the land use aspects of local plans.[32]

The problem of accommodating development in the coastal zone while maintaining or improving water quality has been addressed by innovative point/nonpoint source trade-off programs similar to the concepts used in managing "airsheds" under the Clean Air Act.[33] These programs allow new sewage treatment plants in an area only if the additional development they serve is equipped with state-of-the-art NPS controls and if point source nutrient inputs from the plants are more than offset by a reduction in NPS inputs from existing development.[34]

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[28] Issue Paper-Nonpoint Source Pollution Control, Puget Sound Water Quality Authority, May 1986, at 4-114 and Buresh, *supra* note 26, at 1454-1455.

[29] See generally, Long Island Regional Planning Board, Nonpoint Source Management Handbook, 1984.

[30] See generally, Minnesota Statutes, Chapter 110 B; MCAR, Chapter 9300; and Minnesota State Planning Agency, The Handbook for Comprehensive Local Water Planning, November 1987.

[31] See generally, Comprehensive Land Use Plan for Winona County; Winona County Zoning Ordinance (draft); and Wheeler, Philip H., Olmstead County's Farmland Soil Loss Controls, Rochester-Olmstead Consolidated Planning Department, (no date) (hereinafter cited as Olmstead County).

[32] Eric Livingston, Florida Department of Environmental Regulation, Nonpoint Source Management Section, March 21, 1988 (personal conversation).

[33] See generally, Mast, Gary and Bruce Zander, Application of Innovative Pollutant Trading for Reservoir Water Quality Management in Colorado, Lake and Reservoir Management, Vol III, North American Lake Management Society, 1987, at 138-145.

[34] *Id*.

Agricultural NPS pollution must also be controlled. However, the traditional voluntary, cost-share approach to agricultural NPS control is generally not an effective method.[35] While the use of such programs can sometimes be justified in small areas where water quality problems are not severe, cost-sharing cannot be used as a "synonym" for a NPS management in states or regions with significant NPS pollution impacts.

Voluntary cost-sharing involves offering a farmer a payment, as incentive, to install the Best Management Practices (BMPs) needed to control a particular problem. This method has been used by United States Department of Agriculture (USDA) for years to encourage farmers to adopt soil conservation practices, and more recently, states have used it to address off-site NPS pollution problems. Cost-sharing is criticized for many reasons: it involves paying polluters with the taxes of the general public while good land stewards are relatively disadvantaged; the level of funding needed to address widespread problems adequately is far too high; and the types of BMPs adopted under such a program usually are influenced by the farm community and often do not adequately reflect water quality considerations (particularly in terms of nitrate and pesticide contamination).

Successful regulatory programs for controlling surface and groundwater contamination from cropland and feedlot agriculture do exist.[36] In Olmstead County, Minnesota, an enforceable county erosion ordinance applicable to agricultural lands has been developed and implemented.[37] In Nebraska, the Central Platte Natural Resources Conservation District has adopted requirements that farmers modify their fertilizer application practices according to the quality of the surrounding groundwater.[38] Parts of California have adopted regulations requiring dairies and feedlots of any size to collect and properly dispose of runoff from areas with high concentrations of manure.[39]

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[35] Dunn, James W. and James S. Shortle, Agriculture Nonpoint Source Pollution in Theory and Practice, presented at the Conference on the Economics of Chesapeake Bay Management III, May 27-29, 1987, at 15-17.

[36] Olmstead County, *supra* note 31; Nebraska Groundwater Management and Protection Act (LB 894); Central Platte Natural Resources District Newsletter, Vol. 3, No. 6-87 (hereinafter cited as Central Platte Natural Resources District); and California Administrative Code, Title 23, Chapter 3, Subchapter 15, Article 6- Confined Animal Facilities (hereinafter cited as California Administrative Code).

[37] *Id*. (Olmstead County).

[38] *Id*. (Central Platte Natural Resources District).

In addition to specific types of programs, binding and enforceable conflict resolution measures are needed to ensure that local governments do not "compete" for industry and development while transporting NPS pollution to other, more "environmentally aware" localities. Here again, methods have been developed to provide this important function.[40] For example, part of the local water quality planning process developed in Minnesota involves both formal and informal means for most local governmental entities to settle disputes.[41] The state (through the Minnesota Board of Water and Soil Resources) has the ultimate authority to resolve disputes based on its interpretation of the actions necessary to carry out the functions of an approved local plan.[42]

V Solutions--Active Leadership and Oversight Should Be the Driving Force Behind Specific Coastal NPS Pollution Control Efforts

Many state and local officials contacted in the NRDC study acknowledge that, lacking leadership, guidance and clear authority to act from the federal level, any attempts to develop and implement strict state coastal protection programs will be severely limited. Without strong state leadership, there are no clear, aggressive criteria by which local NPS program impacts are judged. Absent such leadership, local officials are much less likely to risk politically unpopular decisions or to participate in regional programs.

These same criticisms can also be made regarding the relationship between federal and state officials. Federal leadership is essential in implementing the Coastal Zone Management Act (CZMA).[43] This need is evident in the NPS pollution aspects of both the CZMA and the CWA (including the water quality-based controls of CWA Section 303). Therefore, it is necessary to develop a detailed, coordinated set of NPS policies, guidance and review criteria in both the National Oceanic and Atmospheric Administration's (NOAA) implementation of the CZMA and the EPA's NPS management programs. These changes in NPS management must reflect the requirement in the CWA that NPS pollution be reduced to "the greatest extent practicable" and Congress' clear mandate that water quality standards be met.[44]

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[39] Id. (California Administrative Code).

[40] MCAR, Chapter 9300, supra note 30.

[41] The Handbook for Comprehensive Local Water Planning, supra note 30.

[42] Id.

[43] Archer, Jack H. and Robert W. Knecht, The U.S. National Coastal Zone Management Program-Problems and Opportunities in the Next Phase, 15 Coastal Zone Management 109.

Similar review capacity needs to be established among relevant agencies at the state level and applied to local government decision making and land use planning. In this sense, federal agencies need to develop programs that require states to "regulate local regulations", in order to influence the NPS pollution implications of local land use policies and programs.[45]

A. EPA and NOAA Must Present a "Unified Front" in Their Respective NPS Management Programs

EPA and NOAA are responsible for major coastal NPS pollution management programs.[46] A fundamental problem with these programs is that they have slightly different purposes which, if improperly carried-out, can hamper their NPS management potential. Whereas the goals of the CWA are essentially to *protect* water quality, the CZMA provides for the *management of multiple land and water uses within the coastal zone.*[47]

There is also evidence (discussed below) that these programs are not being effectively coordinated. When viewed in terms of the goals and NPS management requirements of the CWA, these problems represent major areas of potential program improvement.

CWA requirements are incorporated as minimum requirements of CZMA program approval. CZMA states that CWA requirements "shall be incorporated in any program developed pursuant to ... [CZMA] and shall be the water pollution control ... requirement(s) applicable to such a problem."[48] Additionally, CWA Section 319 (b)(2)(f) requires that states review federal assistance programs (potentially including CZMA activities) to ensure that they are consistent with the CWA Section 319 goals and requirements.

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[44] See, CWA Sections 319(a)(1)(C); 303(c)-(e).

[45] Buresh, *supra* note 26, at 1442-1445.

[46] EPA is responsible for the oversight of state water quality standards (CWA Section 303) and NPS Programs (CWA Section 319); NOAA's Office of Ocean and Coastal Resources Management is charged with the approval and oversight of state CZMA programs.

[47] See, CWA Section 101 and CZMA Section 303. Consistency has been the subject of judicial and congressional consideration. See generally, Secretary of the Interior v. California, 104 S. Ct. 662 (1984) and Coastal Zone Management Consistency Provisions, 1977: Hearing on S. 1412 Before the National Ocean Policy Study of the Senate Committee on Commerce, Science, and Transportation, 100th. Cong., 1st Sess. (1987).

Unfortunately, while EPA has coordinated with NOAA in the area of data collection,[49] it is not evident that state CZMA programs are being scrutinized by EPA to ensure that such programs reduce NPS pollution to "the extent practicable" or that they ensure compliance with water quality standards. Nor is it clear that NOAA is reviewing EPA NPS management activities for their effectiveness in meeting the water quality protection objectives of specific state CZMA programs. State NPS programs also indicate a similar lack of coordination and consistency in coastal protection and NPS management programs.

For example, the federal agency strategies included in the recent recommended national NPS policy do not include a strategy by NOAA for the NPS management aspects of the CZMA, nor were any NOAA officials even included in the task force that developed national nonpoint source policy.[50] In addition, national guidance for the Nonpoint Source Assessments and Management Programs required by CWA Section 319 do not explicitly require any coordination with state or local CZMA program officials, or other coastal managers (although this coordination is not precluded).[51]

This lack of program integration is also evident in state NPS programs. A recent summary of the Chesapeake Bay states (i.e., Virginia, Pennsylvania, Maryland) indicates that virtually no coordination exists between state NPS officials and state and local officials involved in the state coastal zone management program.[52] Internal EPA and NOAA guidance should specifically require national, state and local CZMA officials to work directly with their NPS management counterparts not only in data collection, but in rule promulgation and program development and implementation.

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[48] 16 U.S.C.A. Section 1456(f).

[49] See, for example, EPA/NOAA Team on Near Coastal Waters, Strategic Assessment of Near Coastal Waters-Northeast Case Study (Interim Draft), November 1987.

[50] See, U.S. EPA, Final Report on the Federal/State/Local Nonpoint Source Task Force and Recommended National Nonpoint Source Policy, Appendix B: Agency Strategies, January 1985.

[51] See, U.S. EPA, Office of Water, Nonpoint Source Guidance, December 1987.

[52] See, U.S. EPA Region 3, Chesapeake Bay Liaison Office, Chesapeake Bay Nonpoint Source Programs, January, 1988.

State coastal officials have also indicated that the NPS guidelines and enforcement actions of both EPA and NOAA are far too vague and few in number. Consequently, politically it is almost impossible to require localities to undertake any particular action to protect coastal waters (especially progressive programs, such as comprehensive land use planning) absent extreme, glaring water quality impacts. This makes preventive programs unlikely. These state officials have suggested agreements between NOAA and EPA that withhold grants for sewage treatment plant construction if CZMA programs do not enforce NPS controls (buffer zones, density restrictions, site plan review procedures, etc.) in localities responsible for NPS pollution.[53] The vagueness of existing guidance indicates the need for requiring states to establish specific programs and controls in these localities, whether directly or through a rigorous local program review process.

B. Progress Will Only Be Made if EPA Leads by Example: The Continuing Legacy of EPA's Nonregulation of Stormwater

States and localities have little incentive to improve NPS control programs unless strong examples are set at the federal level. EPA's history of stormwater regulation -- or nonregulation -- sets the worst possible example for state and local NPS control.

For the past decade and a half, EPA has consistently adopted a policy of regulating stormwater as little as possible. The 1972 Clean Water Act required all point sources to obtain permits by April, 1973. But EPA's initial NPDES program rules exempted stormwater from this requirement.[54] NRDC sued to invalidate this stormwater exemption.[55]

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[53] The Fourth Circuit recently upheld a condition on a sewage treatment plant grant award imposed by EPA to protect floodplains, and specifically to prevent NPS pollution, Shanty Town Associates Limited Partnership v. EPA, No. 87-1090 (4th Cir., April 4, 1988.).

[54] 37 Fed. Reg. 28390 et seq. (December 22, 1972); 38 Fed. Reg. 13528 (May 22, 1973).

[55] NRDC v. Costle, 568 F.2d 1369 (D.C. Cir. 1977).

In 1979, EPA finally issued regulations addressing stormwater discharges. But even these regulations narrowed the scope of the CWA requirement by excluding storm sewers outside urban areas. Once again, NRDC sued to correct this problem.[56]

During the Reagan Administration, EPA took a series of additional actions to minimize the scope of stormwater regulation, including "nonenforcement letters," and extensions of permit application deadlines.[57] A third lawsuit was filed to end this continuing history of delay.[58]

Congress sought to end this continuing controversy in section 405 of the 1987 Water Quality Act, adding section 402(p) to the Clean Water Act. This section sets forth a detailed schedule for the control of stormwater from various municipal and industrial sources.

But once again, EPA is flaunting Congress' intent, both through delay and through efforts to narrow the scope of the statute. While initial stormwater application regulations are due by February, 1989, EPA has not even issued proposed regulations. It is now clear that the initial stormwater regulations will be at least ten months late.

More important, apparently EPA will attempt to narrow Congress' municipal stormwater requirement as much as possible. While the Clean Water Act defines a "municipality" as a "city, town, borough, county, parish, district, association, or other public body ... having jurisdiction over ... wastes ....,"[59] apparently EPA plans to impose municipal stormwater requirements only on incorporated municipalities. Thus, EPA's regulations will not have the broad, national coverage that the law requires.

EPA's long and continuing history of delay in imposing proper controls on stormwater must be corrected for two reasons. First, stormwater poses a significant threat to the nation's coastal and other waters. And second, why should state and local governments devote time, money, and other resources to controlling urban runoff when EPA refuses to exercise appropriate leadership?

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[56] NRDC v. EPA, No. 80-1607 (D.C. Cir.). This case was remanded following the 1987 Water Quality Act.

[57] See, e.g., 50 Fed. Reg. 35200, 35203 (August 29, 1985).

[58] NRDC v. EPA, No. 85-1803 (D.C. Cir.). This case was also mooted by the 1987 amendments.

[59] CWA Section 502(4).

C. USDA Must Become More Actively Involved in the NPS Management Activities of Coastal Management and Water Quality Officials

The 1985 Food Security Act[60] contains several natural resource conservation provisions that also have NPS control implications. These include: "sodbuster" provisions that deny agricultural program assistance to farmers who cultivate previously uncultivated highly erodible land without the use of an approved conservation plan;[61] a "swampbuster" provision that withholds USDA program assistance from farmers who cultivate wetlands that have been converted to agricultural use; the "conservation reserve program" (CRP) that pays farmers to remove highly erodible cropland from cultivation; and "conservation compliance" that requires farmers of highly erodible lands to develop and implement approved conservation plans.[62]

While these programs have been described as having important NPS pollution control benefits, there are many shortcomings in their relationship with EPA NPS management efforts. The CRP allows for payments to retire cropland for filter strips[63] conversion on "lands that are not highly erodible ... but that pose an off-farm environmental threat".[64] However, the choice of the land to be placed into the filter strip program can not be targeted based on federal or state data indicating the relative contributions of specific watersheds to NPS problems.[65] Generally, all of these programs have been designed to reduce soil erosion, not to protect water quality, a somewhat subtle, but important distinction.

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[60] Pub. L. No. 98-198, 99 Stat. 1504-1515, 16 U.S.C. Section 3801 et seq.

[61] The development of Conservation Plans usually is administered by local soil and water conservation districts with technical assistance from local USDA Soil Conservation Service personnel. They can address both on-sight and off-site erosion problems and often are based on maintaining the productivity of the soil rather than reducing any specific NPS impacts.

[62] Food Security Act of 1985, U.S.C. Sections 3801-3845.

[63] Filter strips are uncultivated areas along streams, lakes and estuaries that support grass or riparian vegetation and serve to remove sediment and nutrients from runoff and groundwater flowing into a body of surface water. U.S. EPA, Guide to NPS Pollution Control, July 1987, at 95.

[64] 16 U.S.C. Section 3831 (c)(2)

[65] Amended 7 CFR Section 704.7

A recent draft of a USDA analysis of soil and water conservation needs identified the protection of surface water and groundwater quality as second only to reducing erosion.[66] While this is an important first step, EPA comments on this document reveal that USDA still needs to:

1. propose methods to improve coordination with EPA and state water quality management agencies;

2. improve the consistency of the Food Security Act and Federal and state NPS assessments and programs; and

3. make recommendations on how particular programs should be changed to reflect this new emphasis on water quality protection.[67]

NPS officials in Florida have expressed concern that the state soil conservation committee[68] has rejected their requests to modify the list of BMPs cost-shared through the Agricultural Conservation Program (ACP)[69] to better reflect water quality concerns. In general, most state NPS programs are run by different agencies than those responsible for the ACP, so that often two sets of BMPs (with two separate cost-share programs) compete for the attention of farmers.

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[66] United State Department of Agriculture, A National Program for Soil and Water Conservation: 1988-97 Update (draft), at 9.

[67] Letter from Richard E. Sanderson, Director, Office of Federal Activities, EPA to Maxine H. Barron, Acting Director, Soil Conservation Service, (June 9, 1988).

[68] State soil conservation committees are usually composed of representatives of the agricultural sector as well as federal, state and local agricultural agencies with representatives from other relevant agencies. The committee is responsible for setting policy for certain state and federal soil conservation activities within the state.

[69] The Agricultural Conservation Program provides funds to farmers for erosion control and soil conservation practices. These funds are distributed by local committees representing the federal Agricultural Stabilization and Conservation Service and do not, as a rule, reflect water quality improvement goals. A Report to Congress: Nonpoint Source Pollution in the U.S., supra note 19, at 3-9.

Mutually compatible policies, BMPs, and programs need to be developed by USDA, EPA and states so that, where necessary, water quality concerns are addressed as well as erosion, either through USDA or separate EPA and state water quality protection programs. The bias that USDA and states have developed towards voluntary programs[70] needs to be addressed by clarifying the distinction between USDA cost-share erosion control programs and EPA/state water quality protection programs.

Therefore, EPA should recognize in its review of state NPS programs that not all NPS controls "are created equal" and that voluntarism cannot stand in the way of (or be considered) effective NPS control, especially when better alternatives exist. The difficulty in observing immediate water quality improvements from most NPS controls increases the need to make sure that aggressive programs are being implemented and enforced. By better defining what constitutes aggressive NPS controls, EPA can exert greater influence on states that do not distinguish properly between USDA conservation planning and EPA/state water quality protection.

D. Federal Funding for NPS Programs and CZMA Grants Must Be of Sufficient Size to Assist State and Local Officials and to Influence Their Decision Making

Billions of federal dollars have been appropriated over the past two decades to address point source pollution. Yet despite widespread recognition that NPS pollution contributes to more than half of the nation's water pollution problem, astonishingly little money has been appropriated to address NPS issues.

State and local coastal officials and NPS managers perceive the lack of funding for both CZMA grants and NPS programs as a primary impediment to improved NPS pollution control in coastal areas. Although $400 million dollars was authorized in the 1987 Water Quality Act for implementing approved state NPS programs,[71] no funding has been appropriated to date. Low priority for CZMA activities in the Reagan administration has also resulted in reduced funding for state grants to operate approved CZMA programs as well as and for federal CZMA activities.[72] It is critical that these funding gaps be filled in future years.

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[70] See, for example, Dunn and Shortle, supra note 35 and Report to Congress: Nonpoint Source Pollution in the U.S., supra note 19, at 3-2-3-5.

[71] See, CWA Section 319(j).

[72] Archer, Knecht, supra note 43, at 107-108.

Adequate funding in these two programs serve several important purposes that have been identified in the NRDC study. Most simply, perhaps, many NPS and coastal management programs are funded at such low levels by states, that program effectiveness is considered to rise and fall in direct proportion to federal funding.

For purposes of illustration, suppose that the CWA Section 319 NPS Program was funded at its full $100,000,000 authorization for FY 1988.[73] If this were to supply an average of $2,000,000 to each state for NPS control, it would represent over 140 % of the $1.43 million provided by Virginia for its entire NPS efforts in the Chesapeake Bay in FY 1986-87.[74] Other state NPS programs are not funded even to the Virginia level, and in these cases, federal funds can be even more important.

Without adequate funding, the federal government lacks an important tool to use in leveraging officials of state and local NPS and coastal programs to include particular controls or levels of control necessary to achieve water quality goals. Although a legal mandate exists to enforce water quality standards, funding is an important "unofficial" mechanism to enforce compliance with these standards. More than one official commented that if the "carrot" of federal funding were dangled in front of state officials and politicians, increased program oversight and guidance from the federal level would not be resisted.

Finally, the promise of funding represents more than money or influence. It establishes that national leaders are willing to make a commitment to the problem of NPS pollution and, therefore, can justifiably expect states and localities to make the same commitment. This removes an often used excuse that if the federal government does not consider a problem important enough to fund, than states should not either.

VI Summary-Institutional Problems are Influenced More By Political Barriers Than Technical Ones

State and local coastal area managers and NPS control officials are currently overwhelmed by the consistent growth in coastal regions as well as their lack of control of NPS pollution exported from non-coastal areas. Population in the Nation's coastal counties increased 69% between 1950 and 1980 making population densities in these areas nearly 500% of the densities in non-coastal counties.[17] The census bureau predicts that by 1990, 75% of the U.S. population will live within 50 miles of a coastline.[18] Clearly, any changes contemplated at the federal level must address these issues.

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[73] Id.

[74] Virginia Department of Conservation and Historic Resources, Chesapeake Bay Nonpoint Source Pollution Control Program-Annual Report, July 1, 1985-June 30, 1986, at 25.

Some officials contacted in the NRDC study see a model for federal NPS water quality protection in the strong federal enforcement of local land use controls in the Coastal Barriers Resources Act (CBRA) and the past implementation of the National Flood Insurance Program (NFIP). These programs provide land use and building standards for new construction, and in some situations, prohibit federal flood insurance and infrastructure funding for any new developments on unsuitable lands, such as floodplains and coastal barriers.[19]

To address coastal NPS pollution, a similar system could be developed whereby localities in areas responsible for significant NPS pollution (i.e., non-attainment of designated water uses) are prohibited from receiving state and federal funding that directly or indirectly supports additional growth, unless specified NPS controls are initiated. Given adequate funding of EPA and NOAA programs and a proper integration of USDA and EPA NPS control efforts, specific NPS programs could also be leveraged through grant requirements, water quality standards and inter-agency "cross compliance" agreements that would make agricultural program subsidies contingent on implementing EPA water quality-based source controls.

State and local coastal officials have also commented that federal agencies are slow to require NPS controls in state coastal programs, because there is a perception that this would intrude on EPA "turf". These officials also believe that such controls are not required by federal coastal officials, because EPA would not "back up" claims that these controls are needed to comply with state water quality standards. These fears indicate the need for greater consistency in federal programs.

Essentially, the missing link in NPS management is planning and leadership at the federal level. It must move away from its "hands-off" approach to NPS management which focuses on limited program development and data collection. One thing is clear, the barriers to more effective NPS management are political, not technical, as evidenced by the many examples of progressive programs across the country. The federal government must force reluctant coastal states and localities to develop these kinds of programs.

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[17] National Water Quality Inventory: 1986 Report to Congress, supra note 3, at 41.

[18] Id.

[19] Platt, Rutherford, H., Pelczarski, Burbank, eds., Cities on the Beach, Management Issues of Developed Coastal Barriers, at 17-18, 245-249.

Along with the responsibility to develop, enforce and take an active part in this new continuous planning and management process, the federal government must also reinforce its leadership and authority by funding NPS management and coastal programs to their full authorizations. Funding is a vital prerequisite to effectively addressing the many other NPS management needs that have been identified in this testimony.

States have been given three chances to adequately address NPS pollution by Congress: in 1972, 1977 and 1987. The last reauthorization of the CWA (in 1987) must be viewed as the last time that states will be allowed to address NPS pollution through "flexible" program management. The 1972 CWA was passed in large part because states were ignoring the water quality standards that they were supposed to apply to polluted waters. This is largely the case today in the area of NPS pollution. Yet, based on our preliminary discussions with EPA, EPA is not prepared to disapprove state NPS plans that do not meet the requirements of Section 319 of the CWA, so long as "some progress" is made.

States cannot be allowed to continue to use NPS management approaches that are known to be relatively ineffective compared to other proven methods. If states continue to employ largely voluntary and poorly funded programs that do not involve significantly local governments, water quality-based regional solutions or comprehensive land use planning, then Congress must use its power to ensure that states and localities utilize the most effective NPS controls available.

Recommendations

1. Federal NPS and Coastal management programs should be funded to such levels that EPA and NOAA can influence state and local NPS controls by conditioning grants on agreements to undertake certain activities. This must include full section 319 funding.

2. Congress should exercise oversight of EPA, NOAA and USDA activities, and the activities of other relevant agencies to ensure that:

    a. detailed, meaningful, inter-agency agreements are reached that conform to the requirements of CWA Sections 303 and 319;

    b. EPA and the states develop and enforce narrative, numerical and/or biological water quality criteria applicable to NPS pollution;

c. EPA seriously evaluates state NPS plans for compliance with the CWA, and disapproves inadequate plans;

f. coastal NPS programs-

i.involve controls outside the coastal "zone";

ii. require basin-wide, water quality-based solutions that integrate multiple jurisdictions into regional programs;

iii. are based on water quality goals and maximum pollutant reduction targets for specific watersheds;

iv. utilize local land use controls that address cumulative NPS impacts; and

v. discourage voluntary NPS programs unless their benefits to water quality can be demonstrated as greater than or equal to regulatory programs.

ENVIRONMENTAL DEFENSE FUND

1616 P Street, NW
Washington, DC 20036
(202) 387-3500

Testimony of Joseph Goffman

ENVIRONMENTAL DEFENSE FUND

Before the

Subcommittee on Oceanography

and the

Subcommittee on Fisheries and Wildlife Conservation and the Environment

Committee on Merchant Marine and Fisheries

U.S. House of Representatives

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National Headquarters
257 Park Avenue South
New York, NY 10010
(212) 505-2100

1405 Arapahoe Avenue
Boulder, CO 80302
(303) 440-4901

2606 Dwight Way
Berkeley, CA 94704
(415) 548-8906

1108 East Main Street
Richmond, VA 23219
(804) 780-1297

My name is Joseph Goffman. I am an attorney with the Environmental Defense Fund, a private, non-profit organization. EDF appreciates the opportunity to share with you the results of a two year study by four EDF scientists: Dr. Diane Fisher, a chemist; Dr. Michael Oppenheimer, an atmospheric physicist, Jane Ceraso, and Thomas Mathew. This study was recently published in the report Polluted Coastal Waters: the Role of Acid Rain. A copy will be submitted with the request that it be includeded in the record. This study should transform our view of the acid rain problem and of the strategies that must be adopted to prevent further deterioration of our coastal waters and ecosystems. Our analysis shows that acid rain is not just a threat for freshwater lakes and fish; it is contributing to the decline of our coastal waters as well.

Atmospheric nitrate deposition, a component of acid rain, is an important source of the nutrient nitrogen to the Chesapeake Bay and other coastal waters. We calculate that acid rain contributes 25% of the nitrogen from human activities which enters the Chesapeake, making it second only to fertilizer runoff as a source of anthropogenic nitrogen to the Bay. Since publishing our report, we have had the opportunity to do calculations which test the effect our underlying assumptions have on our final estimate. These calculations are described in detail in a supplemental document prepared by Drs. Fisher and Oppenheimer and attached as Appendix A. Our estimate is very robust. By varying our assumptions, we calculate a range of 21 to 32% for the acid rain contribution. We consider 25% to be our best estimate. Our preliminary analysis of the Long Island Sound and the Neuse River basin, an estuary in North Carolina, indicate a similar role for acid rain in these waters.

Our Eastern coastal waters are currently receiving enormous inputs of nutrients, especially nitrogen and phosphorus. In most cases, production of algae in marine ecosystems is limited by nitrogen inputs (See "Nutrient Limitation of Net Primary Production in Marine Ecosystems" by R.W. Howarth in Annual Review of Ecology and Systematics, in press). Adding more nitrogen is like spreading fertilizer on the water, causing the growth of too much algae, which then uses up the oxygen and blocks the sunlight which other marine life needs to survive. This is especially harmful to bottom-dwelling organisms, such as oysters, clams, crabs and lobsters, which can't swim away and which slowly suffocate as oxygen levels drop. Some forms of algae are also directly toxic to fish, while others are directly harmful to underwater plants. Both the toxicity, and the oxygen depleting effects of algal blooms lead to massive kills of aquatic organisms. Large portions of our estuaries are becoming dead seas, unable to support the life that once flourished there.

Such degradation is a serious threat to the economy of coastal regions. In 1984, more than 3 million metric tons of seafood was harvested along the Eastern coast of the United States. The value of commercial and recreational fishing in the Chesapeake Bay region was estimated to be nearly $1 billion in 1980, and nationwide these activities generate $10 billion. Tourism along the Atlantic coast is another multi-billion dollar industry which depends critically on water quality in our coastal zones.

The results of two previous studies led us to suspect that acid rain might be an important source of nitrogen pollution in coastal waters. EDF had previously examined sources of nitrate to the Catskill reservoir system in New York. Our analysis showed that inputs of acid rain had caused nitrate levels to increase by a factor of four in this system from 1960 to 1983. We suspected that inputs of acid rain might be a controlling factor for concentrations of nitrate in other surface waters as well. A recently published USGS survey of water quality in rivers nationwide indicated that in nearly 90% of the rivers surveyed nitrate levels had increased between 1973 and 1985. The two main causes of this increase were agricultural activity, and acid rain. Both of these studies showed that acid rain is a significant source of nitrogen in some watersheds. We decided to examine the nitrogen budget of the Chesapeake, to determine the importance of acid rain as a source of nitrogen to this water body. We chose to focus on the Chesapeake because this is the estuary for which the most complete data is available.

Most previous studies of nitrogen inputs to coastal waters have either ignored or seriously underestimated the role of acid rain. Those studies which included atmospheric inputs at all generally only included the amount of nitrogen in wet precipitation falling directly into the body of water. This is only one of the pathways by which atmospheric nitrate reaches coastal waters. Two other important routes are dry deposition of nitric acid and nitrogen oxide vapors in the absence of rain, and runoff of both dry and wet atmospheric nitrate which falls on the land surrounding the water. Most of the acid rain nitrogen which falls on the land is taken up by trees and other vegetation, but a fraction also washes into rivers which then drain into the Bay. Even studies which ignore these two pathways often show large nitrogen inputs from atmospheric nitrate. For instance, a 1982 study by Dr. David Correll and co-workers at the Chesapeake Bay Center for Environmental Studies of the Smithsonian Environmental Research Center concluded that wet deposition of nitrate directly into the Rhode River, a sub-estuary of the Chesapeake Bay, provided 19% of the average annual nitrogen loading. If acid rain nitrogen from the other two pathways had been included, this percentage would have been much higher.

We calculated the nitrogen loading to the Chesapeake Bay from atmospheric nitrate as follows. First, we obtained data from National Atmospheric Deposition Program (NADP) monitors within the Chesapeake Bay watershed. We used this to calculate the total amount of nitrate in wet deposition to the watershed. Published values for dry deposition, including the latest data from NAPAP's dry deposition monitoring network (see NAPAP 1987 annual report) show that dry deposition of nitric acid and nitrogen oxide gases contributes from one to four times as much nitrogen as wet deposition. We therefore made the conservative estimate that dry deposition is approximately equal to wet. We estimated the amount of atmospheric nitrate falling on the land which would runoff into the Bay for each land type. For instance we assumed that 90% of the nitrogen in atmospheric nitrate deposition which falls on forested lands is taken up either by the trees, or by processes in the rivers, and that only 10% actually washes off the land into the Bay. We took care to differentiate between nitrogen in atmospheric ammonium, which originates largely from agricultural sources, and nitrogen in atmospheric nitrate, which originates primarily from fossil fuel combustion.

We obtained data on the other sources of nitrogen (sewage and industrial discharges, fertilizer, and animal waste) from the EPA Chesapeake Bay Program, and from state agricultural agencies.

We calculate that atmospheric nitrate deposition contributes a full 25% of the nitrogen entering the Chesapeake Bay both from nitrate deposited directly on the water, and from the contribution of atmospheric nitrate deposition to land runoff. Our preliminary estimates for the Long Island Sound, and the lower Neuse River in North Carolina indicate that acid rain is contributing more than 20% of the nitrogen in these waters as well.

We have therefore identified an important source of nitrogen to estuaries which has previously been largely ignored. Large reductions in nutrient inputs to coastal waters are necessary if we want to halt their deterioration. The EPA and the Chesapeake Bay states have established goals of 40% reduction of phosphorus and nitrogen inputs, and similar goals have been recommended for the Neuse River. Progress has already been made on phosphorus inputs, and further reductions are planned. Reductions of nitrogen inputs from agricultural runoff and point sources have also been proposed. We support these measures. However, if we ignore the large inputs of nitrogen from acid rain, not only will the reduction goals not be reached, but nitrogen reductions from other sources will be largely undone as this source continues to grow.

The sources of nitrate in acid rain are emissions from motor vehicles, power plants, and factories. If left uncontrolled these emissions are projected to increase by 40 to 60% over the next four decades. In this case, acid rain will become the major manmade nitrogen source to the Chesapeake Bay.

We recommend that nitrogen oxide emissions be cut by 40%, to parallel planned reductions in other sources of nitrogen to the Chesapeake Bay. This reduction will also benefit the Long Island Sound, the Neuse River, and all other East coast waters which are currently overloaded with nitrogen. The coastal states can begin this job on their own, but a federal role is absolutely essential to finish the job. Most of the acid rain falling on coastal states originates from other states upwind. The first step to control this problem is reauthorization of a Clean Air Act with strong controls on acid rain precursors. Energy efficiency measures, technology retrofits for existing stationary sources, and advanced boilers and stack and tailpipe technologies on new sources can reduce nitrogen oxide emissions by the necessary amount. Energy efficiency has the advantage of also cutting sulfur dioxide emissions and carbon dioxide emissions, which are associated with the intensification of the greenhouse effect.

Reduction of these emissions would also result in decreased acidification of freshwater lakes, decreases in costly damages to structural materials, decreased nitrate in drinking water, and decreased air pollution from ground level ozone, a component of urban smog which causes lung damage at levels currently observed in most major cities in the United States. At the same time, if such measures are not implemented, our Eastern coastal waters will continue to decline.

APPENDIX A

SENSITIVITY OF ATMOSPHERIC NITRATE LOADING ESTIMATE TO UNDERLYING ASSUMPTIONS IN POLLUTED COASTAL WATERS: THE ROLE OF ACID RAIN

By Dr. Diane Fisher and Dr. Michael Oppenheimer

In the report, Polluted Coastal Waters: the Role of Acid Rain we estimate that atmospheric nitrate, a component of acid rain, contributes 25% of the total anthropogenic nitrogen loading to the Chesapeake Bay. This comes both from acid rain falling directly into the Bay, and from the contribution of acid rain to nitrogen in land runoff. In order to make this estimate, we made assumptions about how much nitrogen is retained by different land types. We also assumed that dry deposition of nitric acid vapors and gaseous oxides of nitrogen was approximately equal to wet deposition of nitrate, and that dry deposition of ammonia gases and ammonium species is approximately equal to wet deposition of ammonium.

Here we present the results of calculations in which we vary these underlying assumptions. We examine the effect this has on the calculated contribution of atmospheric nitrate deposition to total nitrogen loading of the Chesapeake Bay. We obtain a range of values of 21 to 32% for the contribution of atmospheric nitrate to nitrogen in the Bay. These results are presented in Table I. The calculation is most sensitive to the assumptions about dry deposition, and retention of nitrogen by forested ecosystems. It is least sensitive to the assumptions about retention of nitrogen by urban landscapes.

SENSITIVITY TESTS OF ATMOSPHERIC NITRATE LOADING CALCULATION TO THE CHESAPEAKE BAY (reported as % of total nitrogen loading)

Parameter varied	Low	Medium	High
Forest retention	21	25	30
Urban retention	24	25	26
Pasture retention			
of precipitation	23	25	-
of animal waste	21	25	-
Cropland runoff	-	25	27
Dry deposition	21	25	32

Below we describe how each of the sensitivity calculations in Table I was done. It is assumed that the reader is already familiar with the calculation of nitrogen loadings presented in Polluted Coastal Waters: the Role of Acid Rain. We therefore only discuss how the sensitivity calculations differ from this "base case".

FOREST RETENTION

For the base case, we assumed that 80% of the nitrogen input to forested ecosystems is retained by the forest, and that another 50% of the runoff is retained by the rivers, allowing only 10% of nitrogen input to forests to reach the Bay. The 80% value was based on literature values for retention of nitrogen by small forested watersheds, and was in the middle of the reported range of 52 to 97%. For the "low" case in Table I, we assume that forests retain 97% of nitrogen inputs, and that the runoff is reduced another 50% in the rivers, for a total runoff of only 1.5%. Both the atmospheric nitrate, and atmospheric ammonium inputs to forests were reduced by this amount. In this scenario, atmospheric nitrate loading becomes 21% of the total. For the "high" case, we assume a retention factor of 52% by the forests, and another 50% for the rivers, giving an overall retention of 76%. This causes atmospheric nitrate to rise to 30% of the total loading.

URBAN RETENTION

Urban areas are not expected to be very efficient in retaining nitrogen. All of the major urban areas in the

Chesapeake Bay are located directly next to the Bay (including tidal portions of tributaries), so runoff from this land goes directly into the Bay. Urban areas are also covered by impervious surfaces which do not absorb nitrogen. We therefore estimated that urban lands would retain 0% (no retention) to 70% (same as croplands) of nitrogen inputs. For our base case, we assumed 35% retention.

For the "low" case, we assume 70% nitrogen retention by urban lands. Both atmospheric nitrate and atmospheric ammonium input to urban lands are reduced by this amount. This causes the atmospheric nitrate loading to fall to 24% of the total. For the "high" case, we assume 0% retention. This causes atmospheric nitrate to become 26% of the total. The calculation is relatively insensitive to the assumption made about urban retention because urban areas occupy only 3% of the total land area of the watershed.

PASTURE RETENTION

In our base case, we made separate assumptions about retention of atmospheric nitrogen and animal waste nitrogen by pastures. Based on a literature value for retention of animal waste nitrogen, we assumed that 95% would be retained. We reduced runoff of animal waste nitrogen by another 50% to account for river uptake, giving an overall retention of 97.5%. We assumed that the more soluble forms of nitrogen in atmospheric deposition would be retained about as efficiently by pastures as by croplands, or 70% retention overall, including river uptake.

In the "low" case for retention of atmospheric nitrogen by pastures, we assume that retention of this source is similar to that of forests, or 90% overall including river uptake. This lowers the atmospheric nitrate deposition contribution to 23%. We do not present a "high" case because we consider it unlikely that pastures would retain nitrogen less efficiently than croplands.

In the "low" case for animal waste retention, we assume 70% retention by the land, reduced by another 50% for river uptake, for 85% retention overall. This increases our estimated runoff of animal waste nitrogen by a factor of six. In this scenario, the relative contribution of atmospheric nitrate deposition is lowered to 21% of the total loading. We do not present a high case because it is unlikely that animal waste nitrogen will be retained more efficiently than in our base case.

CROPLAND RUNOFF

Our method for estimating cropland runoff for our base case was different than our method for calculating runoff from other land types. For other land types, we used retention factors to estimate the amount of each nitrogen input which would runoff.

For croplands, we assumed that the EPA Chesapeake Bay Program's estimate for total cropland runoff was correct (This estimate is presented in the 1983 publication Chesapeake Bay: a Framework for Action), and then estimated the contribution of atmospheric nitrate deposition to this runoff.

The Chesapeake Bay Program reported that in a year of average rainfall 39.8 million kg of nitrogen would runoff croplands during the months of March through October (8 months). We assumed that nitrogen would runoff at the same rate during November through February as during the rest of the year, and multiplied EPA's 8 month total by 1.5 to approximate the annual runoff (59.8 million kg of nitrogen). We then compared total inputs of fertilizer and of atmospheric nitrogen to total runoff to derive a retention factor of 70%, including river uptake.

This method of approximating the annual runoff is almost certain to give an overestimate of cropland runoff. Virtually all of the fertilizer inputs to croplands are expected to occur during March through October. Runoff of nitrogen during the winter months should be less overall, and will arise primarily from atmospheric inputs, since other inputs do not occur in winter. Our base case estimate will overestimate the importance of fertilizer runoff, thus underestimating the percentage contributions from other sources.

For the "high" case presented in Table I, we assume that all fertilizer input occurs during March through October. We add this input to total atmospheric inputs during this 8 month period, and compare this input to total runoff to derive a retention factor of 78%, including river uptake. During winter months, we assume that the only inputs to croplands are atmospheric, and that these are retained with the same 78% efficiency. This actually lowers the estimated total loadings from atmospheric sources, but it lowers the estimated fertilizer contribution even more, so as a percentage the importance of all sources other than fertilizer rises. In this scenario, the contribution of atmospheric nitrate rises to 27% of the total nitrogen loading. We do not present a low case because it is unlikely that cropland runoff will be higher in winter than it is during the rest of the year.

DRY DEPOSITION

Atmospheric deposition of nitrate and of ammonium occurs in two forms: wet deposition of these ions in rainfall, and dry deposition of nitric acid vapors, gaseous oxides of nitrogen, and gaseous and particulate ammonium. Dry deposition is not routinely measured, but literature values show that it is approximately equal to wet deposition as a source of nitrogen. For our base case, we therefore assumed that dry deposition was equal to wet deposition.

For both our high and low cases, we assume the same total cropland runoff as in our base case. For this land type, we only change the relative contribution of atmospheric sources compared to fertilizer inputs. For other land types, we use the same retention factors as in the base case, thus changing the total calculated runoff from each land type. For our "low" case, we assume that dry deposition of both nitrates and of ammonium is only 50% of wet deposition. This causes atmospheric nitrate to fall to 21% of the total loading. For our "high" case, we assume that dry deposition of nitrates and ammonium is twice wet deposition. Atmospheric nitrate then rises to 32% of the total.

NRDC'S RESPONSES TO SUPPLEMENTAL QUESTIONS ON NONPOINT SOURCE POLLUTION

Question 1

Short answer

A legislative change is not legally necessary to link water quality standards to nonpoint source pollution control. However, because existing legal requirements are not well-recognized and enforced, a legislative change clarifying or reinforcing the existing link would be desirable. It should be clear that the amendment is a clarification, however, so that the effectiveness of existing requirements is not jeopardized.

Explanation

For two distinct reasons, nonpoint source pollution already is linked to compliance with water quality standards.

First, section 401 of the Clean Water Act (CWA) applies to both point and nonpoint source discharges. Section 401 applies to "any discharge into the navigable waters" (emphasis added). The definition of the term "discharge" includes, but is not limited to, the "discharge of a pollutant". CWA 502(16). The "discharge of a pollutant" includes only point source discharges. CWA 502(12). Therefore, because section 401 uses "discharge", as opposed to "discharge of a pollutant", it includes nonpoint source as well as point source discharges.[1]

Second, and more important, section 401 is not the only, in fact is not the primary, means by which both point and nonpoint source discharges are tied to water quality standards. Other applicable requirements are explained below.

Pre-1987 Law

The primary tool for implementing water quality standards is set forth in section 303 of the CWA. Under section 303(d)(1)(A), states must identify all waters for which technology-based effluent limitations on point sources are not strict enough to ensure compliance with water quality standards.[2] Next, for each such water, states must calculate a "total maximum daily load" (TMDL) of pollutants (for each pollutant criteria violated) "at a level necessary to implement the applicable water quality standards with seasonable variations and a margin of safety ...." Finally, states must incorporate these TMDLs into their "continuing planning process" under section 303(e) of the Act.

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[1] Two Ninth Circuit cases confirm the applicability of state water quality standards to nonpoint source discharges. Oregon Natural Resources Council v. U.S. Forest Service, 834 F.2d 842 (9th Cir. 1987); Northwest Indian Cemetery Protective Assn. v. Block, 795 F.2d 688 (9th Cir. 1986).

TMDLs are applied to point sources by imposing more stringent effluent limitations than required under technology-based controls; and to nonpoint sources (before 1987) through the state's comprehensive water quality management plan prepared under section 208 of the Act.[3] Comprehensive water quality management plans under section 208 expressly must consider[4] NPS pollution from a number of sources, including agriculture, silviculture, mining, construction, salt-water intrusion, land and subsurface disposal of pollutants, and other sources.

To the extent that the link between compliance with water quality standards and NPS pollution control is not clear from the language of the CWA, it is clarified by EPA's regulations. EPA refines the TMDL process as follows: "Loading capacity" is the maximum amount of pollution that a water can receive without violating water quality standards;[5] "Load allocation" (LA) is the portion of loading capacity attributed to NPS pollution or natural background sources;[6] "Wasteload allocation" (WLA) is the portion of loading capacity attributed to point sources;[7] and TMDL is the sum of all LAs and WLAs.[8]

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[2] Biennial state reports to EPA must identify the extent to which water quality standards are met, and specifically must include a "description of the nature and extent of nonpoint sources of pollution," and recommendations on how to control NPS pollution. CWA section 305(b)1).

[3] Section 208 requirements also must be incorporated into the state continuing planning process (CPP) under section 303(e). EPA not only can approve or disapprove a CPP -- it must disapprove an NPDES permit program under section 402 whenever a state does not have an approved CPP.

[4] Despite the apparently mandatory language of section 208(b)(2), section 208(b)(4)(A) states that control measures under subsections 2(F)-(K) must be developed only when necessary to comply with section 303. Presumably, this means when necessary to impose additional NPS controls to meet water quality standards. Nevertheless, since every state has waters that do not currently meet water quality standards, every state should have addressed NPS pollution in its section 208 plans.

[5] 40 CFR § 130.2(e).

Thus, under Part 130, states not only must identify waters that do not meet water quality standards and determine by how much; they must allocate allowable loadings between point sources and nonpoint sources/natural background sources, and further must distinguish nonpoint sources from natural background wherever possible. And while the CWA itself insists only that TMDLs be applied to achieve compliance with water quality standards, the regulations require states to allocate these controls among WLAs for point sources and LAs for nonpoint sources.[9]

The requirement that water quality standards be met by controlling nonpoint sources is also clarified in EPA's regulations on the contents of water quality management plans. The regulations reiterate the need for states to include in their water quality management plans "best management practices" (BMPs) for NPS pollution.[10] More importantly, the regulations more expressly relate NPS control requirements to achieving water quality standards:

> The plan shall describe the regulatory and nonregulatory programs and, activities and Best Management Practices (BMPs) which the agency has selected as the means to control nonpoint source pollution where necessary to protect or achieve approved water uses.[11]

Even more significant is the requirement that NPS control strategies include regulatory programs where necessary to meet water quality standards, or where non-regulatory approaches are "inappropriate".[12]

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[6] The regulation requires that "[w]herever possible, natural and nonpoint source loads should be distinguished. 40 CFR § 130.2(f).

[7] 40 CFR § 130.2(g).

[8] 40 CFR § 130.2(h).

[9] 40 CFR § 130.7(b), (c).

[10] 40 CFR § 130.6(c)(4)(iii).

[11] 40 CFR § 130.6(c)(4)(i) (emphasis added).

[12] 40 CFR § 130.6(c)(4)(ii).

To summarize the pre-1987 requirements of the CWA and EPA regulations: States were required to establish water quality standards for all waters. Standards had to be set at levels necessary to meet fishable/swimmable uses wherever attainable. States were required to identify all waters where water quality standards were not met after applying effluent limitations on point sources. In these cases, additional water quality controls had to be imposed on point sources through more stringent limits, and on nonpoint sources through BMPs and other control strategies included in section 208 management plans. Where nonregulatory approaches to NPS pollution control were not adequate to meet water quality standards, states were supposed to resort to regulatory programs.

Additional Requirements in the 1987 Water Quality Act

In section 316 of the 1987 WQA, Congress addressed NPS pollution head on. Section 316(a) added a new section to the Clean Water Act (section 319) requiring comprehensive state NPS management plans. Section 316(b) highlighted NPS pollution control as one of the major goals of the Act:

> it is the national policy that programs for the control of nonpoint source pollution be developed and implemented in an expeditious manner so as to enable the goals of this Act to be met through the control of both point and nonpoint sources of pollution.[13]

The bulk of the NPS requirements added by the WQA are contained in section 319. In many cases, section 319 restates, clarifies, or redefines existing requirements under sections 303 and 208 of the Act, and under existing EPA regulations. But some additional authority is added as well.

States are directed to identify waters that, "without additional action to control nonpoint sources of pollution, cannot reasonably be expected to attain or maintain applicable water quality standards or the goals and requirements of this Act."[14] This requirement, in effect, restates the existing requirements of sections 303(d) and 305(b), as implemented by 40 CFR Parts 130 and 131. However, it does require states more precisely to distinguish those waters that do not meet water quality standards or goals due in large part to nonpoint sources.[15]

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[13] Section 316(b) of the WQA added section 101(a)(7) to the CWA. The goals of the Act, of course, include water quality standards.

[14] CWA section 319(a)(1)(A). The Senate Report explains that the reference to both water quality standards and to the goals and requirements of the CWA reflects the fact that not all waters meet the Act's goals and requirements (i.e. do not meet fishable/swimmable uses), and a desire that additional NPS controls be used to improve water quality and to upgrade these waters. S. Rep. 99-50, 99th Cong. 1st Sess. 35 (May 14, 1985).

States also must identify specific subcategories of nonpoint sources, or even "particular nonpoint sources" that add "significant pollution" to each of the designated waters.[16] Again, this requirement shadows existing requirements of section 208(b),[17] albeit in a more precise and pointed fashion. For each source of NPS pollution identified, section 319 requires states to develop detailed management plans to address NPS pollution, including BMPs and other regulatory and nonregulatory programs.[18]

Thus, under both pre-1987 and post-1987 law, noncompliance with water quality standards can and should be used to justify and to require additional controls on nonpoint sources. The Act does not translate these controls to specific effluent limitations, as is true for point sources. However, it is doubtful whether precise effluent limitations could be calculated or enforced for nonpoint sources in any event. Rather, states should use the TMDL process to estimate the overall loadings from categories of nonpoint sources, and select controls designed to reduce NPS loadings by those amounts. If inadequate load reductions are achieved, further measures can be employed. But the fact that this analysis necessarily must be less precise than for point sources does not obviate the fundamental requirement to control nonpoint sources where necessary to achieve water quality standards.

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[15] A similar provision added by the 1987 Act, CWA section 304(l), requires states to identify waters that do not meet water quality goals due to the presence of toxic pollutants. Obviously, these two provisions must be read together, and with the existing requirements of section 303. Despite the potential confusion, it is clear that waters cannot be left off the section 319 list simply because NPS pollution is not the *only*, or even the *major*, reason why water quality goals are not being met:

> The State need not demonstrate that the nonpoint sources of pollution are the sole cause for the water quality standards not being attained or maintained. The fact that the standards are not likely to be attained or maintained under existing conditions in the reasonably near future, and that there are loadings from nonpoint sources of pollution that can reasonably be expected to be contributing to the water quality problems, should suffice for a State to identify such waters under subsection 319(a)(1)(A).

S. Rep. 99-50, *supra*, at 35; *see also* H. Conf. Rep. 99-1004, 99th Cong. 2d Sess. 143 (October 15, 1986).

[16] CWA § 319(a)(1)(B).

[17] Section 208(b)(2)((F)-(K) requires both the identification of various nonpoint sources and the development of BMPs and other measures to control these NPS sources.

[18] Section 319(a)(1)(c) requires states to identify the *process* by which BMPs and other control methods are identified. The control strategies themselves are required by section 319(b)(2).

However, the requirements discussed above, while available since 1972, have not been widely used or enforced, either by EPA or by the states. Even after the 1987 Act, EPA and many states have failed expressly to link NPS controls to water quality standards. Therefore, while additional legislation on this point is not strictly necessary, it is undoubtedly desirable, to clarify and to reinforce the above. If such measures are proposed, it should be clear that Congress believes that the amendments clarify and reinforce, so that the integrity of existing requirements cannot be questioned.

QUESTION 2

Federal cooperation with state NPS programs is ensured through CWA § 319(k) which requires that federal assistance programs and development projects be consistent with state NPS management programs. Under § 319(k) Federal agencies must modify existing regulations so that states can review individual development projects and assistance applications. In addition, federal agencies must then accommodate the concerns of the states regarding the consistency of such applications with the state NPS management program. CWA § 319 should ensure that federal agencies cooperate with state NPS officials - provided that two important issues are addressed.

First, since states are required to develop NPS controls such that compliance with state water quality standards is achieved, it is essential that EPA enforce state review of federal programs as part of the state's NPS management effort and ensure that federal agencies cooperate with state requests for modifications in federal assistance. Federal development and assistance projects are very important to state politicians and economic development officials. Therefore, an internal conflict is built in to the concept of states pushing for modifications in federal programs that could result in a decrease in federal funding. Likewise, federal agencies that are not involved in environmental protection may not voluntarily modify individual development and assistance projects in such a manner as to decrease certain budget items - at the request of state NPS officials who often are a rather small voice in state (much less federal) government.

Second, it is important that the scope of § 319(k) be interpreted as broadly as possible to include federal funding for state highway and infrastructure development, price supports and other subsidies for agriculture, grants to state and municipal housing authorities and support of state coastal zone management programs, as well as other general federal support for state economic development and environmental management. Otherwise, it is not likely that a comprehensive evaluation of federal assistance programs will ever occur at either the state or the federal level.

If these interpretations and requirements are not met, strengthening amendments may be in order. It should be noted that additional authority is provided by CWA § 313, under which the discharge or runoff of pollutants from federal property or facilities is fully subject to all applicable CWA control requirements.

RESPONSES TO QUESTIONS FROM CONGRESSMAN STUDDS

FOR MR. WHITTINGTON

Question 1:

In controlling nonpoint source pollution under the NPDES program of the Clean Water Act, the certification process of section 401 of the Act provides an effective link between the NPDES permits and the state water quality standards. Section 319 does not seem to provide such an explicit link. What approaches under existing law can EPA, USDA, and the states take to ensure that nonpoint source controls achieve compliance with state water quality standards?

Is a legislative change necessary to ensure a level of compliance comparable to that for the NPDES program? If so, what form should that change take?

Response:

Section 319 of the Clean Water Act requires States to prepare and submit for EPA approval State NPS Management Programs to control nonpoint source (NPS) pollution entering waters identified in the State's NPS Assessment Report. The test for inclusion in the NPS Assessment Report is that the waters, "...without additional action to control nonpoint sources of pollution, cannot reasonably be expected to attain or maintain applicable water quality standards or the goals and requirements of this Act;...." We understand, therefore, that the intent of Congress in section 319 is to have the State NPS Management Programs provide controls which ensure that the waters identified in the State's NPS Assessment Report attain and maintain applicable water quality standards.

Determining the need for such controls is a particular instance of determining the need for controls in water quality limited segments. The process to accomplish this (i.e., the process for determining total daily maximum loads (TMDLs), waste load allocations (WLAs) for point sources and load allocations (LAs) for nonpoint sources) is already provided in Section 303(d) of the Clean Water Act and EPA's implementing regulations (40 CFR 130.7). EPA will work with the States to help them carry out the TMDL/WLA/LA process for nonpoint sources.

The statutory deadline for submission by the States of their NPS Management Programs to EPA was August 4, 1988. EPA is now in the process of reviewing those Programs. Therefore it is much too early for EPA to evaluate the effectiveness of the current legislative approach to developing and implementing such Programs or offer legislative recommendations. It should be noted, however, that Section 319(m)(2)(E) requires the Administrator to transmit to Congress by January 1, 1990, a final report on the activities carried out under Section 319 which specifically indicates what further actions need to be taken to attain and maintain water quality standards and the goals and requirements of the Clean Water Act in navigable waters affected by nonpoint sources.

Question 2:

EPA's Office of Water has accumulated considerable experience over the last decade and a half with the approval and oversight of state water pollution control programs. In some instances, EPA has approved incomplete programs with the expectation that those gaps would be filled later by the State. In several of these instances, EPA has had to expend considerable amounts of its oversight energies correcting those deficiencies, sometimes with less that satisfactory results. EPA is currently reviewing state submissions under section 319 for nonpoint source management programs. What approach is EPA taking in applying the factors in section 319(d)(2) in its review of state submissions? What steps can EPA take to ensure that the state programs have the full capacity to address nonpoint source pollution from the beginning?

Response:

EPA will fully apply the factors in section 319(d)(2) in its review of NPS Management Programs submitted by the States. Beginning with its initial Nonpoint Source Guidance issued in December 1987, EPA has made clear its intent to approve only State NPS Management Programs or portions thereof which fully meet the requirements of section 319, including the factors set forth in subsection 319(d)(2). In addition to spelling out these requirements in the Guidance, EPA Headquarters has developed and distributed to EPA Regions more detailed checklists for reviewing State NPS Management Programs and is reviewing selected State Management Programs to ensure national consistency and to support EPA Regions in approving Programs or portions which comply with section 319 requirements. (The review/approval authority for State 319 submittals has been formally delegated to EPA Regions by the Administrator.)

Following the process set forth in subsection 319(d)(2), EPA will notify States of revisions or modifications where needed to obtain approval of the Programs. EPA will then work with such States to assist them in making such revisions or modifications through direct staff assistance, technology exchange with other more experienced States or contractor assistance (to the extent limited extramural resources allow).

Revised State NPS Management Programs or portions will be subjected to the same review for full compliance with section 319 as is used with initial submissions. Portions of State NPS Management Programs will be approved only where they are consistent with and support a more comprehensive NPS Management Program addressing all waters identified in the State's NPS Assessment Report.

Question 3:

Section 319(k) of the Clean Water Act provides a mechanism for state review of federal activities that have an impact on state nonpoint source pollution management programs. The section requires the federal department or agency to accomodate the state concerns in a manner consistent with Executive Order 12372. How do you expect this provision will affect the control of nonpoint source pollution? In its current form, is the section strong enough to ensure effective federal cooperation with state nonpoint source control programs? If not, what kind of provision should be adopted in its place?

Response:

Because the deadline for submission by the States of their NPS Management Programs (August 4, 1988) has so recently passed, EPA has no actual experience from which to judge the effectiveness of section 319(k). Early discussions with the States on implementation of this subsection indicated that many States felt that this provision gave them an additional lever, specific to their NPS programs, to obtain consistency of Federal projects and programs with their State NPS Management Programs and reinforced in a useful way already existing procedures and authorities for ensuring Federal compliance with State environmental requirements. At the same time, EPA in the past has encountered some difficulty in obtaining compliance of Federal facilities with State requirements under Executive Order 12088, which is based on legislative provisions which are even stronger than this subsection of section 319. Therefore we remain cautiously optimistic pending further experience with the actual implementation of subsection 319(k).

It should be noted here also that in the final report to Congress on January 1, 1990, on implementation of section 319, the Administrator shall "...identify the activities and programs of departments, agencies and instrumentalities of the United States which are inconsistent with the management programs submitted by the States and recommend modifications so that such activities and programs are consistent with and assist the States in implementation of such management programs."

Department of Agriculture Responses to Additional Questions for Nonpoint Source Pollution Hearings

QUESTION 1: In controlling point source pollution under the NPDES program of the Clean Water Act, the certification process of section 401 of the Act provides an effective link between the NPDES permits and the State water quality standards. Section 319 does not seem to provide such an explicit link. What approaches under existing law can EPA, USDA, and the States take to ensure that nonpoint source controls achieve compliance with State water quality standards?

Is a legislative change necessary to ensure a level of compliance comparable to that for the NPDES program? If so, what form should that change take?

ANSWER: Section 319 of the Clean Water Act requires States to develop nonpoint source management plans that will reduce, to a maximum extent practical, the level of pollution resulting from nonpoint sources. EPA's approval of these plans provides an analagous certification process to that of the point source NPDES permit program. If EPA fully enforces their regulations under Section 303 and requires the establishment of "total maximum daily loads," nonpoint source load reduction goals may be established by the States. States may, under Section 319, use regulatory approaches where nonpoint source load reductions will not be met by nonregulatory approaches. Therefore, EPA, through the management plan approval process already has the necessary authorities to ensure compliance. Consequently, we believe no legislative changes are needed.

QUESTION 2: Section 319(k) of the Clean Water Act provides a mechanism for State review of Federal activities that have an impact on State nonpoint source pollution management programs. The section requires the Federal department or agency to accommodate the State concerns in a manner consistent with Executive Order 12372. How do you expect this provision will affect the control of nonpoint source pollution? In its current form, is the section strong enough to ensure effective Federal cooperation with State nonpoint source control programs? If not, what kind of provision should be adopted in its place?

ANSWER: Section 319(k) simply reinforces a process that is in place now. It does, however, specifically identify nonpoint source control programs as a part of the process. The law provides the States the opportunity to review Federal activities for consistency, but it does not require such a review. Nevertheless, section 319(k) has already begun to improve nonpoint source pollution control through:

- Encouraging better cooperation among Federal, State, and local agencies,
- Obtaining resource sharing in solving high-priority problems, and
- Establishing priorities among hydrologic units.

It is our view that no changes are necessary.

QUESTION 3: The conservation provisions of the Food Security Act are having an impact on a very sizeable segment of the nation's farming community. For the Conservation Reserve, Conservation Compliance, Sodbuster, and Swampbuster programs to have the desired effects on soil conservation and water quality, a high level of compliance will be necessary.

What specific steps is USDA taking in each program to foster compliance? On how many occasions have penalties been imposed under each program? What level of resources is USDA devoting to compliance work in these programs in FY 1988? What level of resources do you expect to devote in FY 1989.

ANSWER: The Department has undertaken numerous steps to foster compliance with the conservation provisions of the Food Security Act of 1985. Implementation of these provisions has become the top priority for the technical assistance provided by the Soil Conservation Service. As of June 30, 1988, they had developed conservation plans for 54 million acres of highly erodible land--38 percent of the 143 million acres affected by the highly erodible conservation provisions of the Act. Plans had been implemented on 17 million acres or about 12 percent of the affected land. Under the Act, a farmer who crops highly erodible land must have a conservation plan by December 31, 1989, and implement it fully by December 31, 1994, to remain eligible for USDA program benefits. We are on target for meeting the 1989 deadline. We hope to have 65 percent of the plans completed by the end of 1988 and the remaining 35 percent by the end of 1989.

The Conservation Reserve Program has already contracted 25.5 million acres of the 40 to 45 million acres mandated by the Act. Another signup was held during August 1988, but the results are not available at this time. The lands under contract are saving about 530 million tons of soil erosion annually--nearly 20 tons per acre contracted. The February 1988 signup also accepted bids for filter-strips along rivers, streams, lakes, and other water bodies. Nearly 16,000 acres were contracted--over 1,300 stream miles. The State of Maryland will be encouraging farmers to bid additional filter-strip lands by offering a "piggy-back" payment of $20 per acre.

The sodbuster and swampbuster provisions have received similar active implementation. An information effort was developed through the Department's network of State, county, and district offices in five agencies--the Agricultural Stabilization and Conservation Service, the Soil Conservation, Service, the Farmers Home Administration, the Extension Service, and the Federal Crop Insurance Corporation. Fact sheets explained how the provisions worked, who would be affected and the deadlines for compliance. These were released also to the press, radio, and television. As confusion arose, as often does in programs of this size and complexity, we sent teams of conservation technicians in to survey the entire area. Our job here at the Department is to help farmers remain in compliance, and we take that responsibility seriously.

For FY 1988, ASCS will be spending about $12.4 million conducting compliance examinations for sodbuster and swampbuster. A comparable amount will be expended in FY 1989, with possible increases occurring as a result of drought legislation. As of March 1, 1988, about $1.9 million of commodity program benefits were denied to violators of sodbuster and $42,000 of program benefits were denied to violators of swampbuster. These violators have exceeded the "de minimis" effects which are allowed under section 1244 of the Act. We will begin monthly reports of violations in about mid-September.

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